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President's Address.

By D. H. E. LINES, M.B., B.S. (Melbourne).

YOUR EXCELLENCY, Mr. Premier, Mr. Mayor, Ladies and Gentlemen, in the first place it is my privilege on behalf of this Congress to assure Your Excellency of our unswerving loyalty to the throne and of our affection for the person of His Gracious Majesty King George V.

We are deeply grateful for Your Excellency's kindness in consenting to honour us with your presence this evening and to open our Congress. Your Excellency's whole life has been spent in service to the Empire, and we recall with particular thankfulness the invaluable assistance you rendered our Commonwealth when you visited us with the British Economic Mission a few years ago. We were, therefore, delighted when we learned that His Majesty had appointed you to be his representative in our State. We are confident that great benefit will accrue to us from your wise guidance in these troublous times. We are also grateful to Your Excellency and Lady Clark for the hospitality you have so generously offered our members.

In publicly expressing to my colleagues my deep appreciation of the honour they have shown me in selecting me as President of this great Congress—surely the proudest professional honour that can be bestowed on any Australian or New Zealand doctor—I recall the words with which Demosthenes commenced one of his greatest speeches. "To begin with, Men of Athens", he said, "I pray to every god and goddess that all goodwill, such as I have ever entertained towards the city and each one of you, may be secured to me from you in view of this present trial". My own doubts as to my ability to perform at all adequately the functions of this distinguished office are so pressing that I would not have had the courage to accept it had I not felt confident that you would accord me the same full measure of goodwill as the Attic orator entreated. It is my earnest hope that the event will not prove that my colleagues' generosity has hopelessly obscured their judgement.

Laudemus viros gloriosos et parentes nostros in generatione sua. Among the more distinguished of our numerous colleagues who have passed to their reward since the last meeting of Congress we should make special mention of Sir Joseph Verco, first President of the forerunner of this Congress, Henry William Armit, Charles Percy Barlee Clubbe, Robert Gordon Craig, Neville Reginald Howse, Robert Hamilton Russell, Athelstan John Henton Saw, Robert Henry Todd and Thorburn Brailsford Robertson. All these were honoured in their generation, and were the glory of their times. They were our leaders by their counsels, wise and eloquent in their instruction. Great were their services to their country and their profession. At the going down of the sun and in the morning we will remember them. May the earth rest lightly upon their ashes.

It is now my pleasant duty to thank the Premier and the Government, together with the Mayor and the City Council, for their obvious eagerness to do all in their power to promote the objects of Congress and to help us entertain our visitors. The Premier and the Mayor have added to our indebtedness by coming here this evening. Our sincere thanks are due also to the Chancellor of the University and the Director of Education for the generous way in which they have placed at our disposal all the accommodation and equipment of the University and the Philip Smith Teaching College and for the help they have so freely given us in many other ways.

The success of such a congress as this is largely dependent on the unseen but strenuous labours of the many men and women who for months beforehand prepare all the details of its procedure so that every moment of work or recreation may be employed to the best advantage. I offer our cordial thanks to each one of this large band of workers, and particularly to the Presidents and Secretaries of the Sections and the Chairmen, Secretaries and Members of the Entertainment and other Committees and the wives of the Tasmanian doctors.

The special thanks of members are due to Dr. H. N. Butler and Dr. W. L. Crowther, the Joint Secretaries, who have left no stone unturned to insure that this Congress shall be memorable from every point of view.

We also gladly record our gratitude to the Editor of THE MEDICAL JOURNAL OF AUSTRALIA, who has placed at our service his wide knowledge of congress procedure.

We are proud to think that the parent body of our Association in the United Kingdom has accepted our invitation to hold its Annual Meeting in Melbourne next year on the occasion of that city's Centenary, and we hope that as many of our members as possible will attend it.

We congratulate the University of Sydney on the recent attainment by its Medical School of its fiftieth anniversary.

On behalf of the Tasmanian Branch of the Association I extend a cordial welcome to our visitors from the mainland and New Zealand. I hope that as a result of our scientific deliberations we shall all find an increase in our power to help suffering humanity, and that deeper mutual understanding, esteem and friendship will result from our more personal and informal associations. I also hope that in their leisure hours our visitors will find refreshment of mind and body in exploring the cool recesses of our mountains and valleys, and especially of our harbour, which, although it has as yet no bridge, is, I need hardly remind you, by far the finest in Australasia. It is at present recovering from an acute attack of disuse atrophy induced by the *Navigation Act*, and we hope that all our members who are consulted by federal politicians will employ hypnosis in their treatment and interpose a suggestion that their patients cannot hope to be cured until those sections of the Coastal Clauses that have afflicted us so sorely are repealed.

Many people are in the habit of expressing their belief that at bottom medical science is really very helpless in the face of serious disease. They are vociferous in their reproaches that we do not discover a cure for this or that malady. The lamentations of some of these Jeremiahs we may safely ignore. Their real complaint is that we cannot relieve them from their ills without requiring them to abandon and abjure the primrose path of physiological unrighteousness. To others we may retort that our science is seldom given a fair chance of displaying her powers, because her assistance is as a rule not requested before the condition she is required to combat has assumed alarming proportions. We may also point out that, even if not one further discovery were ever made, the present sum of human suffering could be enormously diminished if the public would make proper use of the knowledge that is already at its disposal.

The doctor does not need to be reminded of the extent of the unconquered territory of disease. Each new victory seems merely to expand its boundaries, which retreat before his questing eyes as fast as did the longed-for fields of Ausonia before those of Æneas and his comrades. Even as he presses on he realizes to the full the truth of the saying of Buddha that:

> Veil after veil will lift — but there must be
> Veil upon veil behind.

The steadfastness of his attempt to throw light into the dark places of medicine is shown by the fact that since 1900 more than twenty-one specialists of repute have lost their lives through an attack of the disease which they were investigating.

But, lest the vastness of the task that lies ahead should seem to obscure the magnitude of what has already been achieved, it has occurred to me that it may interest my lay audience if I briefly review some of the more recent triumphs of medical research. These are so numerous that even if I restrict myself chiefly to those won since the Great War I shall not have time to touch on more than a very few of the more striking or important of them.

You will all remember how Captain Cook, acting on the advice of a physician, showed that the scurvy, that terrible scourge of far-voyaging sailors, could be abolished by the addition of lime juice to the diet and how he was awarded the Copley Medal of the Royal Society for showing that wort made from dried malt also had an antiscorbutic effect. From

the practical point of view it is probable that his second discovery was more important than his first, since dried malt can obviously be more easily carried on long voyages than fresh fruit. Later it was shown that fresh meat was also an effective prophylactic, and when the disease reared its ugly head in the infant settlement of Hobart Town, Governor David Collins quelled it by establishing a public depôt from which kangaroo and emu soup was issued to the colonists.

Experiments made in the feeding of animals during the War led to the discovery that the exclusion of different foodstuffs from otherwise adequate diets produced different types of disease among the animals, whereas the addition of quite small amounts of those foodstuffs maintained them in good health. One of the first fruits of this work was the discovery that rickets could be caused by a diet deficient in a substance that was present in certain animal fats. Soon afterwards this substance was found to be ergosterol, and the discovery was made of the part played by ultra-violet light rays in activating it both artificially and by the action of sunlight on the skin. It is now called vitamin *D*. Earlier it had been shown that beri beri was due to lack in the diet of another substance, vitamin *B*. Further work has suggested that this vitamin is a mixture of several bodies, one of which prevents beri beri, and another pellagra. Vitamin *A* was next found, and its function in checking infection revealed. There is evidence that its administration to women before labour considerably diminishes the danger of the chief menace to child birth, namely, puerperal fever. More recently other vitamins have been discovered, notably vitamin *E*, the presence of which in the diet is necessary for the development of embryos in the uterus.

The fruitfulness of this line of research led to its rapid extension, and soon it was discovered that pernicious anæmia was also a deficiency disease and one that could be kept in check by feeding with liver or stomach. Several of the other types of anæmia have also been shown to be due to the absence of proper amounts of various substances from the diet and to be curable when these are restored to it. Great progress has been made in the technique of correcting these deficiencies, particularly in the treatment of pernicious anæmia. The exact chemical nature of the various vitamins is rapidly becoming clear, and we are proud to think that a young Tasmanian scientist, Dr. F. P. Bowden of Cambridge University, has made a distinguished contribution to this research.

In view of the widespread ill-health due to vitamin deficiency and the importance of milk, cream and butter in supplying vitamins to the diet, it is disquieting to read advertisements in the Press advising the public to save money by using butter substitutes made from vegetable oils, or by employing cheap skim milk preparations "when the recipe says milk." Legislative action is urgently called for to prevent the disastrous consequences that will follow any extensive replacement of the natural foods by their inferior substitutes.

I need only mention, in passing, the enormous change produced in the outlook for diabetics by the introduction of insulin. Recently it has been recognized that a disease produced by an excess of insulin is not uncommon. This excess is manufactured by tumours of the insulin-forming cells of the pancreas, and some of these tumours are capable of surgical removal.

The discovery of the part played by the parathyreoid glands in the regulation of the calcium content of the blood and other tissues has been correlated with the knowledge of the action of vitamin *D* and has led to a fuller understanding of the rôle of calcium and phosphorus in the body, which has made possible the cure of tetany and osteomalacia, as well as the wrongly-named milk fever of cows. Certain cases of extreme brittleness of bones have been found to be the result of parathyreoid tumours whose excessive secretion has caused the removal of calcium in large amounts from the bones. These tumours also have been operated on with success.

The vast amount of research that has been carried out in regard to the pituitary body has brought to light the fact that this tiny, but supremely important, gland produces at least six distinct secretions, and an excess or deficiency of different members of this group is now known to be the cause of several hitherto obscure diseases. Some of these can be cured by operation or the administration of appropriate extracts of the gland. It has also been revealed that this organ exercises a controlling influence over the sexual functions, and this discovery has led to the evolution of a simple and reliable biological test for early pregnancy or chorionic cancer.

It has long been known that Addison's disease was associated with disease or atrophy of the adrenal glands. After innumerable failures it has been found possible to produce an active extract of the adrenal cortex, and patients afflicted with this hitherto hopeless disease have been successfully treated. Unfortunately, at present the process of manufacture of the extract is so costly as to put the treatment beyond the means of most patients. This will doubtless be remedied with time.

Until very recently general paralysis of the insane was a disease that was invariably progressive and was fatal within a few years of its onset. It has been discovered, however, that if patients suffering from it be infected with malaria (which after a short course is cured by quinine) in a large percentage of them the disease is arrested and they are enabled to return to their usual work again. Further studies have suggested that the malaria acts chiefly through the high temperatures it produces, and there is reason to hope that the malaria therapy, which is not without risk, may be replaceable by other means of inducing hyperpyrexia, such as diathermy or prolonged hot baths.

We know now that breathing is regulated largely by the amount of carbon dioxide in the blood. Further work has revealed that the administration of small percentages of this gas is invaluable in the treatment of carbon monoxide poisoning and the asphyxia of the newly born. It also almost completely prevents pneumonia after operations, and is being experimented with in the resuscitation of the apparently drowned.

Great success has been obtained in the treatment of leprosy, particularly in the early stages of the disease. Leprosy is no more repellent and disabling, and is much less infectious than several other diseases, and Dr. E. H. Molesworth has long protested against the cruel and ineffective policy of some countries of singling out lepers for rigorous segregation. He has pointed out that this merely leads to concealment and spread of the disease. There is an increasing body of medical opinion in agreement with his views.

The high incidence of Bright's disease in young people in Queensland has been shown by Dr. L. J. J. Nye and his colleagues to be due to the absorption of lead derived by nail-biting children from painted veranda rails. Further research and appropriate action should lead to the saving of many lives annually. This work is a confirmation and extension of Dr. Lockhart Gibson's discovery years ago of the damage done by lead to the eyes of Queensland children.

The work of Dr. Jean Macnamara, Dr. R. Southby, Dr. F. M. Burnet and Dr. F. G. Morgan of Melbourne and of Dr. W. G. Robertson of Wellington, New Zealand, has greatly increased our ability to diagnose infantile paralysis in the preparalytic stage, and there is a good deal of evidence that the injection of immune serum during this stage will either entirely prevent the onset of paralysis or greatly lessen its severity. A machine has been invented that enables a patient to breathe even after his muscles of respiration have been paralysed by this disease.

The serum of convalescent measles patients has been found capable of preventing the development of measles in other persons who have been exposed to the disease. Unfortunately, the protection so conferred endures for a few weeks only, but by variation of the technique the contacts can be allowed to have a very mild attack of the disease which confers lasting immunity.

By simple skin tests made with extracts of the parasites we are now able to tell whether a patient is the victim of hydatid hookworm or certain other diseases caused by worms. Similarly, we now know that the injection into the skin of minute quantities of the toxins of diphtheria or scarlet fever will reveal whether a person is susceptible to these diseases or not. If he is, we can easily protect him against them by the injection of appropriate bacterial products. Recent research has given us immunizing agents against diphtheria that are a considerable advance on the toxin-antitoxin mixture that was first used for this purpose.

Vast progress has been made in our knowledge of virus diseases. This has been greatly assisted by advances in optical theory and practice which have made possible the photography of objects smaller than ordinary bacteria. One of the most recent results of this research has been the discovery of the cause of distemper in dogs and the manufacture of an efficient prophylactic vaccine.

In the past many patients have dreaded the anæsthetic even more than the operation. Now this fear can be completely abolished, as the anæsthetic can be administered to them while they are in a sleep gently and pleasantly induced by "Sodium amytal" or "Avertin" or paraldehyde. Moreover, the post-operative somnolence that follows the use of these drugs greatly reduces the vomiting, once so common after ether or chloroform, by delaying the return of full consciousness until the period has passed during which the sickness commonly occurs.

The introduction of the gas anæsthetics, ethylene and nitrous oxide and oxygen, has made possible operation on desperately ill patients who would not have survived the use of ether or chloroform. The administration of grape sugar before general anæsthesia has also considerably increased the safety of the latter. Progress in spinal and local anæsthesia has been such that patients may now be subjected to severe operations while eagerly following by wireless the fortunes of their fancy in the Melbourne Cup.

In the field of surgery Professor Wilkie has advanced our knowledge of appendicitis by his description of the difference in seriousness of its two types—inflammatory and obstructive. The use of chlorides and *Bacillus welchii* antiserum has lowered the death-rate in intestinal obstruction. Surgical diagnosis has been greatly assisted by the introduction of radio-opaque dyes which on excretion enable the outlines of the gall-bladder or kidney pelvis to be photographed by X rays.

The operative therapy of varicose veins has been almost completely replaced by treatment by the injection of sclerosing solutions. The new method not only allows the patient to continue his occupation during treatment, but also is many times safer than the old, and is much less often followed by a recurrence of the trouble. Further, the recognition of the physical factors involved in the production of varicose ulcers has led to their treatment by bandaging with resultant cures that are so regular as to have become monotonous.

The use of tannic acid in the immediate treatment of burns prevents the absorption of the shock-producing substances formed by them, and so has made them much less fatal when extensive. It has also abolished the extreme pain that so commonly used to attend their after-treatment. It is interesting to note that in China strong tea infusions have been used for many centuries to treat burns.

Steady improvement has been made in the technique of employing X rays and radium in the treatment of cancer. In certain parts of the body their use has replaced treatment by operation. The supply of radium has hitherto been almost entirely a Belgian monopoly. It is therefore of interest to learn that a rich deposit of radium-bearing ore has been discovered in Canada, and it is hoped that competition will result in a considerable lowering of the price of the element. The valuable observation has been made that the application of iodine to suspicious areas will reveal the presence of a pre-cancerous condition or very early cancer in a situation that is notoriously subject to it.

Rodent ulcer and skin cancer are comparatively rare in England, and skin tuberculosis (*lupus vulgaris*) very common. The relative frequency of these conditions is reversed in Australia. Sunlight has been found to have powerful therapeutic powers in surgical and skin tuberculosis, and Dr. Molesworth's

patient observations have shown that the same clear skies and bright sunlight that prevent the development of skin tuberculosis here are responsible, owing to the intense ultra-violet irradiation to which they subject us, for the prevalence in our country of the types of malignant disease that I have just mentioned. Only fair skins which do not tan readily are, however, susceptible to them. Their production needs prolonged exposure, and may be avoided by the use by vulnerable persons of suitable hats and by the following of occupations that do not subject the hands and arms to constant sunlight. Frequent sunbaking by persons who burn rather than become brown as a result of it is highly dangerous.

Australian and New Zealand scientists have played their full part in this story of progress. The work of some I have already discussed. There are many others worthy of mention, but time permits me to refer to only a few of them.

Dr. Moppett's brilliantly conceived and executed researches at the University of Sydney into the effects of irradiating tissues with homogeneous X rays have led to the correction of several fundamental errors in the ideas that were previously universally held about the action of these rays, and to a great increase in our knowledge of the chemical composition of living cells.

Working in Melbourne, Dr. C. H. Kellaway has discovered the modes of action of the venoms of the chief Australian snakes, and has produced antivenenes that will often save the lives of persons bitten by copperhead or tiger snakes. The pioneer investigations of Dr. N. D. Royle and the late Professor John Irvine Hunter into the effects of severing sympathetic nerves attracted world-wide attention, and have had notable results. Professor H. J. Wilkinson's brilliant researches have proved untenable the original conclusion that muscle fibres receive nerves from both the central and the sympathetic nervous systems, and Dr. Royle now suggests that the sympathetic system affects muscles indirectly by controlling the blood supply to their motor nerves. Raynaud's disease has been shown to be curable by Royle's operation, and the same surgeon reports success in a similar treatment of *retinitis pigmentosa* and disseminated sclerosis. His demonstration that the blood supply to the brain can be improved by sympathetic trunk section has led to the giving of hearing to patients who had been deaf from birth. Inspired by Dr. Royle, Dr. R. B. Wade has designed an operation that greatly relieves Hirschsprung's disease, and Dr. Harry Harris has found it possible to cure patients with otherwise intractable renal pain.

Dr. T. Cherry, of Melbourne, has continued his investigations into the apparent relationship between tuberculosis and cancer. His statistical inquiries have shown that the death rate from cancer rises at exactly the same rate as that from phthisis falls; and his experiments with mice have lent strong support to his theory that tubercle bacilli are a common cause of cancer, this disease being the response to the invasion by these germs of bodies that have become resistant to their action as the result of a previous attack that has been successfully overcome.

In New Zealand the work of Dr. Hercus and his colleagues on the relationship of the distribution of goitre to the iodine content of the soil has been of outstanding importance.

This account that I have given you of recent developments in medicine is very incomplete. Even so I feel I may have wearied you, but I have at least shown the groundlessness of the occasional charge that our science is both impotent and non-progressive.

A great many of the advances I have described would have been impossible without experiments on animals. Yet there is still a small, but aggressive, minority of the public that is ever trying to have these prohibited by law. The sincerity of these persons is undoubted, but the honesty of the tactics of some of them is decidedly questionable. If they cannot influence the gods to help them, they do not hesitate to call Acheron to their aid. They publish accounts of abominable cruelties which they say are described in named scientific journals, but when we search for these journals we find them non-existent. As a matter of fact, the great majority of experiments on animals are mere feeding experiments with different diets. When operations are performed anæsthetics are always used, and frequently the animal is killed before it regains consciousness. In any case, it suffers no more pain than does any human patient during and after an operation. Even so, the restrictions on this work in some countries are such as to lead Professor J. B. S. Haldane to complain with humorous exaggeration that the law allows his wife to kill the rats in her fowlyard by placing there a poison that will cause them lingering agony, yet if he wishes, in the interests of science, to put the same rats to a painless death he must first obtain a licence signed in triplicate by two archbishops.

The pity of it is that these earnest but misguided opponents of scientific progress could find full scope for their energies in other fields in which, if they were successful, they would prevent more animal suffering in one day in Australia than is caused in all her laboratories in the course of several years. In many of the abattoirs in our land animals are still slaughtered by the inhuman method of cutting their throats while they are still fully conscious. I am aware that certain classes of them are first stunned, but the means employed to do this are crude, and are often ineffective at the first attempt. There is available an inexpensive instrument called the humane killer which stuns animals with certainty and precision. Its use before the animal is bled is legally compulsory in most European countries and in many parts of the United Kingdom. It does not affect the quality of the meat in any way. Our present method inflicts several long seconds of intolerable and unnecessary agony on every animal that is slaughtered by it. Only mental inertia and lack of imagination have prevented us from forcing those who control our abattoirs to abandon the horrible cruelties there practised. These cruelties should not be allowed to continue one moment longer, and both the antivivisectionists and ourselves should insist that the humane killer must be used without exception on every mammal killed there.

Cruel so-called sports still continue to deface our vaunted civilization. Trap shooting of live pigeons

has been largely prohibited, but the coursing of live hares in enclosed courses by greyhounds is still permitted. In many instances, after a terrified attempt to escape from overwhelming odds, the helpless animal is butchered to make an Australian holiday. While we tolerate such things we are little better than the degenerate Romans who rejoiced in gladiatorial shows. Besides the suffering they inflict on the victims, their influence on the spectators is most pernicious. I commend them also to the anti-vivisectionists as objects far more worthy of their attention than painless scientific experiments, the aim of which is finally to abolish suffering from both men and animals.

Our possession of Australasia has for long subjected us to the envy of the dwellers in less happier lands, and my predecessors in this office have often stressed the pressing need of an increased population to fill the empty spaces of our country and to make it safe against infection and the hand of war. Many persons have viewed with alarm the increasing practice of birth control, in the belief that it prevents or delays the urgently needed increase of our inhabitants. But there is evidence that their fears are not necessarily well founded. Birth control is more widely practised in Holland than in any other European country, yet her birth rate is half as high again as that of England and Wales. The deliberate spacing of births has allowed the mothers to build up their own strength between pregnancies and to give proper attention to each baby as it arrives, with the result that both the maternal and infantile mortality rates are among the lowest in Europe. These factors combined lead inevitably to a very rapid net increase in the population. Moreover, the adequate early care of children that is thus possible in Holland has resulted in the splendid physique of her eighteen-year-old army recruits being the subject of widespread admiring comment.

It has been argued that birth control, except in the case of serious maternal disease, does not concern doctors. But doctors are vitally concerned with the preservation of the public health and, since the public is determined to practise contraception, it is the duty of the profession to advise it as to the methods that are least likely to lead to injury to health. Whatever a doctor's private opinion may be on this subject, he must realize that, apart from maternal ill health, the economic position of parents often makes the advent of another child a source of grave danger to the welfare of those already born, whilst its own chances of survival and healthy growth are greatly prejudiced. Moreover, many earnest people claim that they should no more leave to blind fate to decide when they should have children than whether they should die of appendicitis, and such views are at least worthy of serious consideration.

It has been stated that the practice of contraception leads to disease of women, and also to sterility when children are desired later. Extensive experience has shown, however, that with the methods at present considered most advisable both these assertions are baseless and that, since the proper use of these methods requires medical supervision, disease is often discovered at an earlier stage than would have been otherwise possible.

Comparatively few doctors, however, are at present trained in the technique of contraception, and even the skilled application of the best methods that are yet known fails to prevent conception in almost ten *per centum* of cases. So that there is urgent need both for research to discover more satisfactory methods and for the instruction of medical students and practitioners in their use. At present, when pregnancy must be absolutely forbidden, surgical sterilization must be employed.

The real or apparent increase of the mentally subnormal in the community has caused grave concern. Whilst this increase is taking place the racially more desirable members are restricting the number of their offspring. Such a differential increase is obviously dysgenic. Their lack of intelligence and of a sense of responsibility makes it improbable that instruction in contraceptive methods will do much to limit the multiplication of the unfit. The problem bristles with difficulties, but the time seems ripe for the introduction of legislation authorizing the sterilization of many of those who are bearers of the more obvious transmissible defects. Short of this, much more rigorous segregation is urgently required. A most valuable report on these subjects has been published in England by the Mental Deficiency Committee, under the Chairmanship of Professor R. J. A. Berry, and as a result of it the British Government has appointed a special committee of inquiry into the problem of sterilization. Since mental deficiency acts as a Mendelian recessive it is unfortunately clear, however, that even extensive sterilization or segregation will be unable to abolish it from our midst.

The induction of abortion is often confused with contraception, with which it has nothing in common except in so far as contraception prevents the need for it. It presents to us a problem of the greatest magnitude, since the League of Nations has reported that more women die annually in Europe from abortion than from full time child birth. Here again we must face facts. No penalties will prevent a desperate woman from taking any risks to get rid of a child that she cannot endure the thought of bearing. It seems that in many cases if we do not provide means of her finding safe relief—and often every fibre of humanity in us tells us that her request for it is justified—we must drive her to probable suicide by her own crude attempts to obtain it or to run the risk of being murdered by the equally unskilful efforts of lay persons for hire. Many thoughtful people are beginning to realize that something must be done to end the taking of this dreadful toll of our young women and, without going as far as the Russians have, they feel with Professor Sydney Smith of Edinburgh and the late Mr. Justice McCardie and others that the indications for abortion should be extended and that it should be made lawful under controlled conditions for other than medical reasons.

The development of air travel has raised problems of great importance to Australia. Until recently the sea interposed a time barrier that was longer than the incubation period of most of the so-called tropical diseases, and the recognition of the established diseases presented few difficulties to our quarantine

officials. But the advent of the aeroplane has changed all that. Infected persons who seem perfectly well, since their disease is still merely incubating, may arrive in a few hours after their departure from a country where tropical diseases are prevalent and may be potential starting points of disastrous epidemics. This is the more possible since we already have the insect vectors of such diseases as malaria and yellow fever ready to spread the infections if they be introduced by persons suffering from them. The danger also exists of the transport of infected mosquitoes by aeroplanes to Australia. Our public health service is, however, alive to the situation, and is taking measures to deal with it. This new danger makes the more regrettable our national neglect of infant vaccination against small pox. We have, therefore, a large percentage of unprotected persons liable to infection should the disease be introduced. Moreover, it has been observed that vaccinal encephalitis attacks infants very much more rarely than it does those who remain unvaccinated until they become adults.

Much discussion has centred round the possibility of our developing our tropical areas and possessions by our own people. Dr. R. W. Cilento has done a great service by his recent demonstration that climate *per se* presents no obstacle whatever to such development. He has shown that the notorious unhealthiness of the tropics for whites is entirely a matter of disease, and that such disease is preventible. He aptly reminds us that not so long ago almost all the so-called tropical diseases ravaged such temperate countries as England, and were banished therefrom by improvements in sanitation and general conditions of life. The once deadly Isthmus of Panama now has a death rate lower than that of Liverpool, and our great Australian experiment reveals the third generation of our race living and working in our tropics with no loss of vigour or fertility.

In the past many attempts to populate the tropics by the white man have failed, partly owing to his conservatism in the matter of his way of life and his dislike of adopting changes demanded by a tropical environment. Sir Charles Martin, in his Croonian Lecture before the Royal College of Physicians in 1930, summed this matter up as follows:

> In my experience the obstacle to work in hot climates is for the European as much a social as a physiological one. It is clothing. The coolie works with his nice brown body exposed and covered with sweat and is jolly, whereas the white man distressfully labours in a hyperthermic condition, straining his heart to work a refrigerating apparatus which he has rendered inefficient because his sense of dignity forbids him to expose his skin.

We note with appreciation that the Commonwealth School of Public Health and Tropical Medicine at the University of Sydney is now actively engaged in training graduates to supply the special needs of our tropics as well as those of our national health service generally. There is, however, a pressing need for research into the problems raised by our occupation of our tropical areas, and the Federal Council is now giving serious consideration to this matter.

It is worth remembering how rapidly the population of Queensland is increasing. In its central and northern districts, mainly above Capricorn, there are now 281,782 white Australians—that is, 60,000 more than there are in Tasmania. Since 1916 Townsville has increased its numbers by 41% to 31,000, Cairns 37% to 11,000, Mackay 34% to 9,400, and Rockhampton 20% to 30,000. Brisbane, with 334,000 people, now contains the largest white population of any city within 28 degrees of the tropics, and it has trebled its size in a generation. Moreover, the death rate of Queensland, 8·05‰, is lower than that of any other Australian State.

Great success has been attained, especially during the last fifty years, in lessening the incidence of disease and increasing the expectation of life at each age. But much more remains to be done, since we are still afflicted with a great deal of illness that is entirely and easily preventible. In spite of their efforts doctors are still far from the attainment of their ambition to make themselves superfluous. We need to promote a much more active public health conscience among our citizens. We must make employers realize that it is distinctly profitable to them to provide working environments that keep their employees healthy and efficient and, if persuasion is not sufficient, we must make it decidedly unprofitable for landlords and food manufacturers to carry on their businesses in ways that are opposed to the public welfare. Besides this, the public should be educated to a knowledge of the laws of health, and should be urged to seek skilled advice in the early stages of disease. This has been done to a limited extent by the various anti-cancer campaign committees. Some people, remembering the influence of the mind over the body and Janet's classical experiment in which he produced a blister under an ordinary bandage on a hypnotized patient by telling him that the bandage was a mustard plaster, fear that a continued concern with health may produce disease. But this is likely to occur only with a small percentage of neurotics, and the great bulk of the people will not be harmed by being taught how to maintain their health, their most valuable asset. This teaching may be given by properly equipped persons in lectures and wireless talks, and of course by every doctor in his daily work. The lay Press could also be of inestimable assistance, but I fear that certain sections of it have hitherto shown little desire to assume their responsibilities in this matter. Such rare articles as appear on the subject of health in these papers are often written by persons who have no proper knowledge of the matters with which they are attempting to deal. The public may thus be misinformed on such topics as the social value of alcoholic drinks and the comparative unimportance of drains in regard to the spread of diphtheria, while new and unproved theories of notoriety-hunting nobodies are frequently starred as the latest pronouncements of medical science. A continued policy of publishing brief authoritative articles at short intervals, driving home the same facts from different angles, is seldom pursued by them. Nay, more, the space given to blatant advertisements of worthless patent medicines that can bring no relief whatever from the maladies they profess to cure makes me think that in health matters many papers have adopted the slogan condemned by the ancient Roman satirist: "*O Cives,*

Cives, quærenda pecunia primum est; virtus post nummos", which we may freely render "O fellow citizens, money must be our first object; public service comes second to profits".

The maintenance of the public health is professedly the care of those set in authority over us. But here money and effort are grievously wasted through overlapping and lack of organization, and also by the remarkable belief of politicians that highly specialized branches of medical science can be efficiently administered by laymen. Thus, in Tasmania, laymen for years have been at the head of the State health department, the school and factory inspection services, the mental deficiency, maternity and child welfare departments, and so on. Moreover, several of these departments are administered under different Acts, and are practically not at all under the control of the health authorities. All this makes for waste and confusion and prevents the collection of statistics and other information that would permit the rapid perfection of a properly organized scheme when such is instituted. There is urgent need for one central authority to supervise and control the work of the various local authorities. Each local authority or centre should be a complete health unit, and all health services, such as sanitary work, factory and school inspection, maternity, child welfare, venereal disease and mental deficiency work, should be under one administration. Such a coordination would obviously promote efficiency and economy as well as permit uniformity of administration.

Since the doctor's rôle is so important in regard to the public health, his own education is a matter of supreme importance. The desirability of his possessing a wide general culture is universally admitted, but the kind of technical training that he should receive has been much debated of late. There is an uneasy feeling abroad that the modern medical student is being so crammed with facts and theories that he has no time for independent thought or for the acquisition of that broad view of health and disease that is so essential to him. He can at any time read up the detailed accounts of various obscure or rare maladies, but only during his training can he easily acquire those habits of observation, reflection and deduction that mark the complete physician, and the belief is gaining ground that the time that should be spent in acquiring these habits is being used up in memorizing a mass of detail that is quickly forgotten. It is being said that the present system aims at making him a kind of cell-colony of half-baked specialists and scientists. Thus he is unable to use effectively the knowledge he has laboriously acquired, and he has a pathetic belief in the ability of laboratory procedures, which he cannot properly perform himself, to solve his problems. He is seldom able to envisage the patient as a sick individual, but looks upon him merely as a piece of deranged machinery. The introduction of psychology into the curriculum, and the increased opportunities for the study of clinical physiology at one at least of our medical schools have done something to remedy these alleged evils.

Views similar to these have been recently expressed by Sir Andrew MacPhail of McGill University, Canada. He said:

> I am quite aware that in these days when the student must be converted into a physiologist, a physicist, a chemist, a biologist, a pharmacologist and an electrician, there is no time to make a physician of him. That consummation can only come after he has gone out into the world of sickness and suffering unless, indeed, his mind is so bemused, his instincts so dulled, his sympathy so blunted by the long process of education in those sciences that he is for ever excluded from the art of medicine.

It seems to me that it is often insufficiently realized that a doctor's training should first of all enable him to heal sick persons. This mistake is not made by the Royal Australasian College of Surgeons, which requires of candidates for its fellowship not only a higher surgical qualification as evidence of the possession of adequate theoretical knowledge, but also convincing proof that their post-graduate training has actually made them capable of applying that knowledge. We are, however, not speaking here of the specialist, but rather of the newly qualified practitioner. Since, however, his technical education is also far from complete when he passes his qualifying examination, we are glad to know that a large number of general practitioners are attending the excellent post-graduate courses now held annually in some of our capital cities.

We note also with interest that facilities have recently been provided in Perth, Western Australia, for practitioners to maintain their knowledge of anatomy by performing dissections. Some time ago similar facilities were offered in this city by the Tasmanian Government with the cooperation of the University Council. We hope that these examples will be followed by all large centres in Australia and New Zealand, and that all doctors who can will seize such opportunities for increasing their efficiency.

In order to play his part successfully the doctor must develop very special qualities of head and heart. His constant observations of human weaknesses should equip him with a wide and wise toleration, so that when confronted with folly and repentance and fear he can smile with kind eyes and be a man with men. He must completely understand that much ill health results from conflicts arising from his patients' unwillingness to face life, and must be able by his personal influence to persuade them to cease running away. He must combine the intellectual processes of a scientist with the outward demeanour and speech of a man in the presence of a frightened child. If his patient's condition be such that he cannot completely reassure him, but must warn him that his days are numbered, then, like Ithuriel's spear, he must heal the wound that he himself makes, and when the angel with the darker draught draws up, he must inspire a courage that robs the draught of its bitterness.

It is clear that few men can possess such qualities in a superlative degree and that the public must suffer if it makes medicine unattractive as a profession to those who do possess them. Very few doctors have died rich men, and the present tendency of the public to seek free or cheap treatment at the public hospitals in increasing numbers is making many parents dubious about encouraging their sons to study medicine. It is our proud tradition that we have ever gladly and freely given our services to the sick poor, but when we see well-to-do persons seek free advice from our members who visit the public hospitals as honorary doctors to attend to the needs

of the destitute, we feel that we are being exploited, and that the present penny-wise policy of the public will prove more than pound-foolish in the long run. Nevertheless, we must realize that many persons of moderate means who do not desire charity are driven to the public hospitals because they cannot afford the fees charged by the private hospitals, and the latter can seldom supply the necessary X ray, pathological, massage and other services. The remedy for this lies in the establishment of well equipped community hospitals such as those recently recommended by the Western Australian Branch of the Association. If these were provided and, in addition, a contributory scheme were devised which supplied its members with hospital treatment for small or no additional fees, a great step would be taken to remove from the politicians the temptation to introduce a scheme of national insurance along lines that would be possibly undesirable. Several such schemes are now under consideration, and the whole problem of hospital services is receiving attention from the Federal Council. This matter is also to be the subject of discussion at a special session of Congress.

But the profession also suffers from gross exploitation at the hands of ambulatory patients in the out-patient departments of hospitals, and the present hospital situation cannot be regarded as satisfactorily adjusted until this abuse also is checked. Recent developments in England make it probable that this difficulty will be solved by the evolution of out-patient departments into consultation clinics to which patients will be admitted only on the production of a letter from an outside doctor.

The nationalization of the profession has been advocated by some persons, but there are many objections to such a course. It would almost inevitably destroy the personal relations that exist between a doctor and his patient, to the detriment of the latter when sick; and men would not be encouraged to improve their knowledge and skill by laborious study if they saw their unambitious colleagues receiving the same rewards, and promotion depending on favouritism or mere seniority.

In the past laboratory researchers in medical science have gone almost unrewarded, since they refrained from patenting their inventions and discoveries. It seems likely that many future workers may be less philanthropic and more business-like. But such a method of remuneration is not open to clinical researchers, and Sir Thomas Lewis, whose own work in this field has shed such lustre on British medicine, has urged the desirability of the endowment at large hospitals of clinical research posts that will offer attractive whole-time careers for life to brilliant young doctors who are capable of filling them. I commend such posts as worthy objects of the testamentary bequests of wealthy Australians and New Zealanders. The good that would result from their establishment is incalculable.

The aims and objects of our Association are often misunderstood by the public, and before I conclude I would like to refer briefly to a few of them. It exists chiefly for the promotion of medical knowledge and the maintenance of harmony between its members. It has often wrongly been called a trades union, but a trades union exists simply to advance the interests of its members, without regard to those of anybody else, and the British Medical Association has never subordinated the interests of the public to those of its members. In individual cases it always makes it perfectly clear that the patient's welfare is by far the most important consideration. The entrance upon the practice of medicine does not, of course, lead to men becoming angels, though that has been denied, nor does it necessarily turn them into devils, but if any of its members shows any tendency to stray from the narrow path of professional probity the Association loses no time in pointing out to him the error of his ways. We hope that the holding of this Congress in Tasmania will enable our people to obtain a better appreciation of our objects and ideals and the great public services given by our Association.

Medical etiquette is often misunderstood and is thought to be some unreasonable code enforced for sinister motives by the Association upon its members. Many patients think that this code prevents them, for example, from changing their doctor at will. As a matter of fact, all that it requires is that the doctor in attendance shall be told that his services are no longer required before a second doctor is called in. We can easily imagine what would happen if a new secretary were installed while the existing one was still in possession. No one doubts his right to change his secretary in case of necessity, but while it takes far less courage to change a doctor than to dismiss an employee, yet we are thought unreasonable because we also ask for a formal notice of dismissal before we are replaced by a successor.

But, besides the avoidance of such personal unpleasantness, this widely misunderstood medical etiquette actually protects the patient. In the treatment of disease remedies such as heat and cold, acids and alkalis, which are opposed in their action, are often used in alternation. If a patient attempts to use them simultaneously, as a result of his employing two doctors who do not consult with each other, the outcome is not likely to be satisfactory. He may even suffer pangs similar to those that followed one of Thomas Alva Edison's earliest experiments. You will remember how the youthful inventor dissolved in one glass of water the contents of the white packets of several seidlitz powders, and in another glass of water the contents of the blue packets, and how he tried to turn a boy companion into an animated flying machine by attempting to persuade him to spring off a table after drinking the two solutions in rapid succession. Despite the chastisement he received from the victim's father, who did not appreciate the value of scientific research, young Edison for a long time maintained that the failure of the experiment was entirely due to a lack of proper persistence on the part of his collaborator after the latter had duly become a human gasometer.

I have now finished. This Congress had its origin as the Inter-Colonial Medical Congress of Australasia, which was first held forty-seven years ago. Its first and only former meeting in Hobart was thirty-two years ago. I hope that I have not made you feel relieved at the thought that even if the same period does not elapse before it meets here again, it is most improbable that you will have to listen to me a second time.

Inaugural Meeting.

THE FOURTH SESSION OF THE AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION), HOBART, 1934, was formally opened in the Town Hall, Hobart, in the evening of Monday, January 15, 1934, by His Excellency Sir Ernest Clark, Governor of Tasmania. There were approximately 600 persons present.

Before asking His Excellency Sir Ernest Clark to declare the Congress open, Dr. D. H. E. Lines, the President, read a telegram that he had received that day from the Council of the Parent Body in London as follows:

> The Parent Body regrets its inability to appoint a delegate to the Australasian Medical Congress, but sends cordial greetings and best wishes for a successful session.

His Excellency Sir Ernest Clark expressed his pleasure at having been asked to declare the Congress open. He said that it was thirty-three years since a medical congress had been held in Hobart, but he hoped that it would not be thirty years before another medical congress was held in that State. He said that while the Premier would welcome the delegates on behalf of the Government and the Mayor would welcome them on behalf of the City of Hobart, he spoke for the whole State.

Two very important subjects would be discussed at the session—cancer and hospital problems. He understood that those who would take part in these discussions were men well qualified to speak on behalf of the medical profession in Australia and New Zealand. He was sure that the members of the medical profession in Tasmania would welcome the opportunity of learning what was being done in the other parts of the Commonwealth and in the Dominion of New Zealand. Cancer was the scourge of the present age, and he felt that everyone must take an interest in the subject, for no one knew whether he might be attacked by that dread malady.

Hospital problems were of importance, not only to medical men, but also to business people. Money was the root of all good as well as of all evil, and no doubt part of the discussion on hospital problems would be devoted to the financial aspect. His Excellency went on to say that he was particularly interested to see the working of public hospitals supported by the Government, for he had in the past had experience only of voluntary institutions. He hoped that among the problems to be discussed would be that of the after-care of patients. He thought that much more attention might be devoted by medical men to this subject, for he believed that Dr. Diet, Dr. Quiet and Dr. Merriment were still the best physicians. He had no doubt that every subject would be discussed in the spirit of sympathy, and he also said that there was a great deal of truth in the old saying that no man could be a good physician until he had himself been ill. He hoped that the deliberations of Congress would be successful and that suffering humanity in the Commonwealth and Dominion and in the world at large might be the better for their deliberations and researches. In their daily work medical men required intelligence, patience, fortitude and self-sacrifice, and he thought that these qualities were more necessary in their research work than in their daily practice. It was the aim of the physician to reduce the sum of human suffering and sometimes to parry the scythe of death.

In conclusion His Excellency again welcomed the visitors to Tasmania and declared the Congress open.

Dr. D. H. E. Lines, the President, then read his address (see page 211).

The Honourable J. C. McPhee, Premier of Tasmania, in moving a vote of thanks to Dr. Lines for his address, said that the address was a masterly review of the present position in regard to cancer. The address was without doubt a worthy contribution for the inauguration of the session. On behalf of the Government, Mr. McPhee welcomed the members of the Congress from the other States of the Commonwealth and from New Zealand. Tasmanians were accustomed to the holding of many conferences in Hobart, particularly during the summer months. As a rule these conferences were composed of persons who discussed matters of various kinds and made extensive recommendations to the Governments of the several States. He did not think that the Medical Congress would do anything of this kind. The work of the medical profession had a bearing on the health of the community and on the general welfare of the public. Not only would the members of Congress benefit by the discussions at the sectional meetings, but the public would also eventually reap the benefit. He thought it was a compliment to the State that the Federal Council of the British Medical Association in Australia had decided to hold the session in Hobart.

Mr. J. J. Wignall, the Mayor of Hobart, seconded the Honourable J. C. McPhee's motion. He dwelt at some length on the attractions of Hobart and discussed the flora and fauna of Mount Wellington. He said that there was a fresh water shrimp on the mountain which was found in no other part of the world. He hoped that the deliberations of Congress would be completely successful.

The motion was carried by acclamation.

In his reply, Dr. Lines acknowledged his indebtedness for help in the preparation of his paper by Dr. Eric Jeffrey, of Lower Sandy Bay.

Dr. G. H. Abbott, the President of the Third Session, held in Sydney in 1929, moved a vote of thanks to His Excellency Sir Ernest Clark for having opened the Congress. The motion was carried with acclamation.

Plenary Sessions.

Cancer.

A PLENARY SESSION of Congress was held at the Phillip Smith Training College on Tuesday, January 16, 1934, DR. D. H. E. LINES, the President, in the chair. The session was called to discuss cancer research.

DR. J. H. L. CUMPSTON, Director-General of Health, Commonwealth Department of Health, described the national organization against cancer in Australia. He began by paying a tribute to the memory of the late Harry Brookes Allen and the late Neville Reginald Howse. Another whose work in the cancer sphere should be recognized was Dr. F. P. Sandes. Dr. Cumpston then went on to show that the increase in the incidence of cancer was not fictitious, but real. He then said that the Archibald bequest to the University of Sydney was the beginning of the anti-cancer campaign. From this arose the Cancer Research Committee of the University of Sydney. After the establishment of this committee, when the Commonwealth Government had spent £100,000 on the purchase of radium, organizations were formed in Queensland, South Australia and Western Australia. Later an organization was formed in Tasmania. In Victoria a Cancer Advisory Committee was appointed in 1929; upon the report of this committee a bill was prepared for presentation to Parliament, but the movement was allowed to lapse. The history of the units in

the national organization was not so important as were principles and progress. The object of the organization was to prevent people from dying or being disabled as a result of cancer. Dr. Cumpston then proceeded to discuss the means available of attaining this objective.

In regard to the prevention of cancer, Dr. Cumpston said that certain irritants would under certain conditions result in cancer. He referred to irritants in industrial processes, to the action of sunlight, and then to an "intangible field of irritants alleged to be direct or indirect causes of cancerous changes" in the body. Among these were tubercle bacilli, food products and so forth. He suggested that possibly the hormonal adjustments taking place in the human body in middle age might, by the production of biochemical irritants, be in some cases associated ultimately with the appearance of cancer. Since prevention was not widely possible, it was necessary to rely largely on treatment for the control of cancer. Success depended on early and exact diagnosis and expert treatment.

Dr. Cumpston discussed the cancer clinic. He said that the basis of the campaign was the hospital unit; every large hospital should have a cancer clinic. This clinic should be the centre of all the cancer activities of the hospital and all the related activities should be scientifically grouped and correlated. Since 1928 a modern cancer clinic had been established in every large metropolitan hospital in the Commonwealth. Dr. Cumpston referred especially to the facilities provided at the Perth Hospital, at the Austin Hospital, Melbourne, and at Saint Vincent's Hospital, Melbourne. He then discussed the keeping of records, which should be complete and should contain exact information of the method of treatment best suited to any particular case.

After referring to the adoption of the international "r" unit in X ray therapy and to the calibration of dose meters, Dr. Cumpston referred to the purchase of radium by the Commonwealth Government. He described the way in which the 10·04 grammes of radium purchased by the Government were originally subdivided. He showed that clinical experience made it necessary for certain changes to be made in the mounting of the radium. Increased screenage had therefore been provided for needles and tubes; two grammes of radium had also been sent to England for remounting in the form of tubes and for conversion to carbonate for use in the production of radon.

Dr. Cumpston referred to the advantages attached to the use of radon and said that the extraction of radium emanation, its collection, its measurement, the drawing of fine gold tubing, the standardization of radium contents in various containers, the construction and calibration of the standard ionometer for measurement of X ray output had all been successfully undertaken at the Commonwealth Radium Laboratory at the University of Melbourne.

In regard to the part taken by the physicist, it was essential that close relation should exist between the clinical groups and the physics department of the university. Research was also necessary. With the development of high voltage X ray plants rays were being produced approaching in wave length the γ rays of radium. If it could be shown that identical rays, with identical or equivalent physiological action, could be produced by X ray installations in substitution for radium, the advantages would be very great.

After passing reference to the need for correlation of surgery with other activities, Dr. Cumpston referred to the education of the medical profession and of the public. To provide facilities for training medical practitioners in radiation therapy diploma courses in radiology had been established in the universities of Melbourne and Sydney. Attempts had been made to educate the public by a publicity campaign, as recommended by the Third Cancer Conference. The cancer conferences were extremely valuable in stimulating thought and securing uniform progress in the campaign. Without a common purpose and harmonious cooperation success was impossible.

DR. H. G. CHAPMAN (Sydney) read a paper in which he discussed the present position of research about cancer. He said that at the beginning of the present century few of those engaged in research made use of any other instrument than the microscope. Now the most delicate and ingenious instruments of the physicist and chemist were in daily use.

Dr. Chapman classified the aims of research into several groups. In the first place he directed attention to the work having for its object the experimental production of cancer in animals. At present particular interest was centred in the discovery of certain pure chemical substances which were most potent in causing cancer in mice. Such substances exhibited a characteristic fluorescence with certain absorption bands in the spectrum. Their production from some of the more complex chemical constituents of the body had led to the suggestion that they might be responsible for spontaneous growths.

Much research had for its object the extension of knowledge of a virus. The range of these studies might be deduced from a recollection that viruses were thought by some to be the most minute of living organisms, by others to be chemical bodies taking part in the reactions of the body, and by others as a matter in that physical state that enabled them to increase the changes in substances in much the same way as a ferment.

The high degree of immunity that was brought about by the transplantation of a portion of tumours of certain animals into animals of the same kind had aroused an immense amount of interest. These researches had been supplemented by much observation in the field of genetics in defining the effects of breeding and of race on animals in respect of transplanted and spontaneous tumours.

Numerous investigators had studied in a great variety of cells and with the aid of an infinity of means the behaviour of simple cells and of single cells, and such study had included the use of most intricate means of observing the metabolism of isolated cells. New branches of science might be said to have arisen from this work. With these papers might be included others dealing with the substances which might be taken up into certain cells such as cancer cells. Some hoped to find the cure of cancer in this direction.

Another vast group included those dealing with the appearance and distribution of individual cancers or of groups of cancer, thus continuing the work begun by Virchow and Moxon a century ago.

Dr. Chapman then turned to consider work done in Australia. He referred particularly to the work inaugurated by the University of Sydney. He traced the history of the establishment of the Cancer Research and Treatment Fund, and referred to the criticism directed against the work done at the University of Sydney. He said that a university that did not foster the advancement of knowledge was unworthy of the name. Further, the application of science to industry and to medicine was worthy of study within universities. It was held that research workers should not be asked to direct their efforts towards some designed object, since such direction led to sordid aims unworthy of learned men and women. Dr. Chapman referred to the industry of the electrolytic separation of zinc carried out in Tasmania, and said that the research necessary to found this industry might well have been carried out at a university. He then made a plea for the better support of research work, whether pure or applied. He also urged the more generous payment of research workers, particularly the younger workers.

The investigation undertaken in Sydney aimed at a systematic study of the effects of radiations both from X ray tubes and radium on living tissues. Dr. Chapman gave details of the type of work necessarily covered by a programme such as this, and he said that while some part of the programme had been carried into effect, work had proceeded more in some directions than in others. Work had been restricted to these lines mainly from the pungent criticism of team work and its effect upon many members of the controlling committees. Again, falling income had brought certain lines of work to an end.

Dr. Chapman mentioned the work of Dr. Thomas Cherry on the effects of living tubercle bacilli in bringing about the production of malignant tumours in certain mice.

Much might be said against some of the interpretations put on this research, but as to the accuracy of the particular experiments there appeared little doubt. Had this research been part of a general scheme and had other workers examined correlated problems, it would be possible to describe these results in more general terms and to give a better interpretation to them. It would seem that in certain mice tubercle bacilli might under particular conditions induce changes similar to other carcinogenic substances.

Dr. Chapman referred to the increasing number of studies of skin cancer in Australia. These cancers, he said, had certain characters that rendered them suitable for research in connexion with causation of cancer.

Dr. Chapman made some additional remarks on the general research of his colleagues in Sydney. He said that it had been found that road workers dipping their hands in tar did not suffer extensively from epithelioma of the skin of the hands. A large series of workers had been examined and epitheliomatous changes had been found less commonly in tar workers than in stone masons, sewer workers and other out-of-door workers. Even the best tars produced cancer when applied to the skin of mice. In this fact lay a pungent criticism of certain carcinogenetic agents used for research purposes.

There were other problems of great difficulty over which physicists were in disagreement. There was at present no method of measuring a real dose of radiation. The ionometer merely measured the amount of ionization, but this varied with the wave length of the rays employed. Since the length of the rays altered as they travelled through the tissues, a dose of 500 *r* on the surface was vastly different when it had passed through one or two layers of tissue. Experiments had been devised in which chloroform was used around the source of radiation and then the degree of ionization was measured. Physicists differed in the measurement obtained, this being due to a condition of "back scatter", which accounted for the variation of readings found by different workers.

The problem of X rays *versus* radium was a difficulty and it was found possible to produce rays almost of the wave length of γ rays, so that situation might determine which should be most conveniently used.

The quality of radiation was of the greatest importance. Irregular wave lengths were much less effective than rays of a single wave length.

In conclusion, Dr. Chapman apologized for a necessarily inadequate survey of a large field, but he had attempted to bring forward some problems which would be of interest to members of Congress.

DR. J. V. DUHIG (Brisbane) discussed the pathological aspect of the cancer problem. He said that until recently the cancer pathologist did not see much beyond the horizon of fixed tissue histology. Today no review of the pathology of cancer could be said to be even moderately complete without a survey of the work of the experimental cytologist, pathologist and biochemist; and latterly the physicist, quite apart from his contributions on radioactive and similar substances, had introduced into pathology spectrophotometry of tissues.

The contribution that the pathologist was called upon to make to the routine investigation of the cancer problem was well recognized as far as the pathology of fixed tissues was concerned. This contribution could not in the future contain much that was new, but there would be developments of detail and technique and interpretation; there would also be occasional need for detailed description of the histology of a new growth. It was doubtful whether histology would ever reveal the cause of cancer, but when cancer was discovered it would be found that pathology of this kind had contributed to the success by having referred all growths coming within its survey to their proper relative position in an orderly scheme. While a few discrepancies in a pathological classification would have little effect in vitiating a sound pathological theory of causation, it would be better to have no discrepancies at all. Progress to this end would be along two parallel lines: (i) a rectification of false or doubtful parts of the present scheme, (ii) more detailed classification of small groups of individuals having a relationship of something of a specific order. The probable lines of development would be first in the restricted domain of pure anatomy, and secondly in that of the general biology of new growths in so far as their microscopic structure was concerned.

The kind of advance likely to be made was exemplified in the recently altered conceptions of tumours of brain, bone, lung and of the melanomata. Dr. Duhig referred in some detail to the work of prominent investigators in each of these spheres; and he pointed out that the work he had detailed indicated that there still remained much careful revision to be done if our conceptions of cancer were to be put on a sound basis. Work on the general biology of cancer histology had not been very fruitful, except as a refinement of existing knowledge. The work of Broders had done nothing to solve the problem of cancer ætiology, but it did throw light on the prognosis of any given growth. Morbid histology had thrown light on the cancer problem in an indirect way. By an examination of sections it must be concluded that chronic irritation could be incriminated in the majority of epithelial new growths. Dr. Duhig was convinced of the influence of chronic irritation in at least two conditions—cancer of the skin and of the uterine cervix. Sampson Handley's book had thrown a flood of light on the question of chronic irritation. It was here that the pathologist could help his colleagues best—he could render a diagnosis on the basis of malignancy or innocence and he could indicate something of the natural history of the growth in question. The latter was not always done. A growth should not only be classified and graded, but all the implications of the individual structure should be laid bare.

The great triumphs of recent years had been in the domain of the experimental pathology of cancer. Of particular importance was the work reported by Cook. Cook reported the chemical structure of certain carcinogenic substances isolated from coal tar; certain derivatives were highly carcinogenic, while others were not. Cook believed that the property of cancer production was a constitutive property depending on a particular type of molecular arrangement and that such a ring system was also found in naturally occurring substances—the sterols, the ovarian hormone and possibly the male hormone. Dr. Duhig thought that it was possible to foresee a type of degradation of cholesterol that might result in the formation of a substance having a structure substantially that of known cancer-producing agents.

After discussing briefly the subject of immunity in relation to cancer, Dr. Duhig made a plea for the more extended use of rapid methods of pathological diagnosis. He quoted conclusions of Bloodgood urging the value of biopsy and its lack of danger; and he concluded with the words that morbid histology was still a living and perhaps a paradoxically extremely vital science.

DR. F. P. SANDES discussed the status of surgery in the treatment of cancer. He said that the advances of surgery, even within the present generation, had been so great that its science and art now consisted of an agglomeration of specialties in diseases of regions, of organs, of systems or of special types. Specialists had encroached upon the province of the general surgeon of former days to such an extent that his field of activity had become more and more constricted. Dr. Sandes thought that in the same way cancer therapy was now a very definite and specialized branch of the healing art, and that the days were gone when cancer could be regarded solely as a surgical disease. The treatment of cancer was no longer individualistic, but was a matter of team work and there was need for the further development of two specialized branches of pathology having reference to malignant diseases, namely, the radiational and the serological. He thought that experts in radiation would in the near future make unnecessary even a greater proportion of operative work on malignant disease. In this threatened invasion of his territory, the surgeon should devote himself to the cultivation of a new outlook upon the problems of cancer, not only from the research, but also from the pathological

as well as from the treatment aspect, so that he might fit himself to maintain his leadership in this branch of the science and art of surgery.

Dr. Sandes went on to say that a rational system of cancer therapy postulated an accurate knowledge of the conditions of the life of the normal cell, and its environment. It also postulated a knowledge of the malignant cell and its surrounding tissues, and an understanding of the reactionary mechanism of these when curative measures were applied. Although the surgeon and the radiologist would have to depend in the pursuit of this knowledge on the work of pure scientists, he would at the same time have to cultivate his own capacity to apply laboratory findings to clinical work. The clinician did not ordinarily concern himself with these views, but any surgeon, seeing the writing on the wall, should interest himself in the treatment of cancer by means other than operative, and he must soon recognize that there had arisen new and important questions in cellular pathology which had a definite bearing on therapeutics and for which newer methods of examination had to be devised or the older methods varied.

Dr. Sandes had no wish to decry the utility of the clinician of morbid histology in the classification of tumours and its bearings on the prognosis and treatment of a person stricken with cancer, but he thought it was time that the pathologist, at the behest of the surgeon and the radiologist, should delve more deeply into certain cytological questions, the examination of which was so intriguing to all clinicians. In this connexion Dr. Sandes discussed the reversability of cell mechanisms by physical or chemical means, and the problem of key atoms and molecules in cells and their relative importance in normal and pathological processes, and the sensitivity or non-sensitivity of cells to chemical substances or physical agencies, and the possibility of sensitizing a non-sensitive cell for therapeutic purposes. He also referred to the action of agencies which damaged or destroyed malignant cells and stimulated the surrounding tissues to a proper reparative action and the relation of this investigation to radio-sensitivity, radio-resistance and radio-necrosis. The surgeon, dimly realizing the importance of these problems, and the X ray and radium therapist who visualized them more or less acutely, looked to a new generation of pathologists for light in their present darkness. It was of little avail for pathologists to reiterate the familiar arguments about the value of biopsy and its possible dangers, to quibble about the classification of tumours or to discuss the value of Broder's classification. The new generation of pathologists should set to work and dig more deeply into the larger pathological fields.

Dr. Sandes said that destructive criticism was easy. He therefore proposed to offer some constructive suggestions. He said that it would be taken for granted that the problems of cancer treatment required the combined activities of a team of workers to secure the highest efficiency. He thought that this team should be led by a surgeon, but he said that the surgeon should prepare himself for this responsibility. This surgeon should be a man of about forty-five years of age, whose arteries were still supple and who had sufficient hospital experience to give him clinical stability. He should have an adequate general scientific education so that he would be able to assess the value of the opinion of over-enthusiastic operators, radiotherapists, pathologists or research workers. Troublesome as it might seem, he had to acquire some comprehension of the nature of electromagnetic waves and their biological effects. He should also have not only an inclination toward, but preferably a working knowledge of laboratory work applicable to cancer pathology and treatment. If the surgeon failed to educate himself up to these requirements, the leadership of the team would have to pass either to a pathologist, a therapist, a biophysicist or a biochemist. The pathologist who had sufficient vision to cast off the shackles of routine work and to equip himself with an accurate knowledge of serological and immunological research in relation to the problems of cancer therapy would be the ideal man if the surgeon failed.

These two fields were so vast that the two different varieties of cancer pathologists would probably be necessary in an ideal team.

Dr. Sandes then discussed the bearing of sodium, potassium, calcium and magnesium, as well as phosphates, carbonates, chlorides and water, in relation to living processes. He also referred to the work of Moppett, of Sydney, on X radiation of certain wave lengths causing a number of different pathological reactions in the experimental tissue exposed to them. He said that the subject of mitosis was extremely important to the cancer therapist. It was a logical consequence of radio-pathological and radio-chemical work that the X ray therapist should be provided with much improved apparatus so that the quality of radiation delivered might be varied at will to a much greater extent than was at present possible.

Another threat to the surgeon's preeminence would come from serological investigation. The cancer therapy team must include a specialized pathologist of this type as a surgeon's auxiliary. From want of a better term this man might be called a cancer serologist or immunologist.

Dr. Sandes thought it was not too much to hope that in the near future the successes attained in immunology in cancer of laboratory animals might be made applicable to the human being and that the biochemical conditions producing cell sensitivity and cell resistance would be better understood. He also said that they had to remember that modern research methods into the causation of disease by viruses were being applied to malignant disease, and it was from specialized pathologists and therapists trained in experimental work of this kind that the surgeon must again expect further assaults upon his position as the leader of a team of cancer therapists. Another member of the cancer therapy team needing special training was the physicist, who should be attached to the team as an adviser and who should have a working knowledge of cytological methods of investigation. The training of technicians also should be more efficiently supervised in the building of the future system of cancer treatment.

DR. L. J. CLENDINNEN (Melbourne) discussed the present status of radium in the treatment of cancer. He said that he intended to confine his remarks to the experiences obtained in radium treatment at the Melbourne Hospital clinic.

In discussing rodent ulcers, he said that it was unnecessary to state that radium should be the only method of treatment for these lesions. Radium therapy was given either by the superficial or the buried technique. The superficial treatment might be given by plates in which the β rays of the radium element were utilized for their caustic effect, these rays having a slightly more destructive action on the walls of the rodent ulcer than on those of the normal tissues. This form of treatment should be reserved for keratoses and similar pre-malignant conditions. It was suitable only for the early types of basal-celled carcinomata or sebaceous adenomata in which subcutaneous infiltration was not present. It was their custom to irradiate all rodent ulcers with needles. When a local block or field anæsthesia could be employed, radon needles screened with 0·5 millimetre of platinum or, preferably, 0·8 millimetre were used. With this method the depth dose was certain and the peripheral areas received adequate dosage. Needles were left *in situ* for five to seven days, and the patients were free to carry on their usual avocations with the needles in position.

Dr. Clendinnen definitely condemned the methods of treating any rodent ulcer with β ray applications, and he laid stress on the necessity for treating these ulcers adequately at the first treatment. Similarly, X ray treatment, with its still lower percentage depth doses compared with distant γ radiation, was even less effective than surface radium treatment. The needling of these lesions was the most effective and scientific treatment.

In cancer of the tongue treatment of hospital patients had been generally disappointing. The lesions responded well to radiation, but there was a remarkable tendency to recurrence later in an area of the tongue quite remote from the original site. Dr. Clendinnen said they knew

little or nothing of the exciting causes, but that predisposing causes of leucoplakia, septic teeth and particularly syphilis were well recognized.

Surgical operation had proved inadequate in dealing with the deeply placed gland fields in cancer of the tongue. Radium packs had failed to give adequate depth doses, even when the superficial skin had been extensively destroyed in the process. Buried needles allowed of adequate depth dosage, but difficulty was experienced in getting enough needles in the required areas, and the areas had to be widely radiated. It was in the use of an adequate needle technique, radium or radon needles six to eight centimetres long being screened with 0·8 millimetre of platinum, that successful treatment of gland fields would lie.

In regard to cancer of the lip, it had been the custom in many clinics to treat epitheliomata of the lip by distance radiation, but at the Melbourne clinic they had always held to the view that interstitial radiation was more effective than distance radiation. Distance radiation was indicated only in areas where the blood supply and lymphatic connexions were poor, or where the integument was atrophic, and occasionally where special considerations of subjacent bone or cartilage arose. Radium had displaced surgery in the lip simply because radium dealt with the microscopic infiltrating border of the neoplasm—the area which was not thoroughly excised by the surgeon, and the area which therefore gave rise to recurrence. The technique of treating cancer of the lip with unit strength radium needles gave very satisfactory results.

It was generally accepted that patients with gland enlargement who had had an early epithelioma of the lip treated with radium need not be submitted to treatment of the gland fields if they remained under observation. Dr. Clendinnen believed that interstitial needling of the gland fields was the correct treatment for secondary malignant involvement of the glands. It had been taught for years that gland epithelioma did not respond to radiation in the same fashion as the primary lesion. With this view they at the Melbourne clinic disagreed. They believed that the glands would respond just as well, provided the same amount of radiation was supplied to these areas. It appeared that the ramifications and extent of the preexisting and new gland formations were so diffuse as to make the usual application of radium, either by pack or needling, inadequate. Without entering into a discussion of depth doses, Dr. Clendinnen said that the depth dose from a two or three centimetre pack could not in any circumstances be compared with the dose received by the tissue around a buried needle. Dr. Clendinnen then described the methods used at the Melbourne clinic.

Turning to the question of cancer of the breast, Dr. Clendinnen said that the whole question of treatment was at the moment open to discussion. The old teachings of surgical text books could not, in the light of recent statistics, be upheld, and it was now becoming more doubtful whether surgical interference was justified at all. The canons of operability were being constantly disregarded, with the result that the post-operative state of many of the patients was far worse than their pre-operative condition. He described the technique of irradiating cancer of the breast. Its technique had been developed by the supply of radium emanation and the use of emanation needles, eight to twelve centimetres long. Of the 218 breast neoplasms treated in the Melbourne clinic during the preceding five years, 175 were classed as "operable", "border-line" or "inoperable"; the remainder were classified as "very advanced". In the operable and border-line cases surgical treatment had shown a local recurrence rate of 83%, while among those treated with radium the local recurrence was 6%; the distant recurrence rate was 16% and 6% respectively. (One hundred and two patients were treated with surgical operations and 17 were treated with radium.) Of the patients submitted to operation, those of the inoperable group, 100% showed growths in adjacent areas within six months of operation; among the corresponding class treated with radium the local recurrence rate was 13%. Distant recurrences for 26 surgical cases were 58% and for 30 radium cases 34%. Of the patients treated by radium, 84% were alive and well for more than one year, with an average period of two years and seven months.

Dr. Clendinnen said that these figures were quoted in support of the opinion that carcinoma of the breast, if incompletely removed, would recur more quickly than if it were treated by radium.

In conclusion, Dr. Clendinnen discussed cancer of the *cervix uteri*. He said that this was a site in which X ray therapy should be combined with the use of radium. As a routine, four to six two-milligramme unit strength platinum needles were buried in the lower uterine segment and two three-milligramme needles were inserted from the lateral fornices deeply into the parametrial tissues without any consideration of the proximity of uterine vessels or ureters. Two ten-milligramme tubes were placed in hollow corks and packed one in each lateral fornix. Doses of 7,000 to 8,000 hours were usually given—the vagina was packed with gauze and the radium was left *in situ* for seven days. All the patients coming for treatment had been in an advanced stage of the disease and there was urgent need for education of the public so that patients would apply earlier for treatment.

DR. E. H. MOLESWORTH (Sydney) read a paper in which he discussed the status of X ray therapy in the treatment of cancer. He said that there was a strong tendency on the part of many people to regard X ray treatment and radium treatment as separate entities. In reality there was exactly the same difference between the two as there was between treatment by radium implanted in the tissue surrounding the growth and that by radium at a distance. The effect produced by the rays generated in an X ray tube and by those emanating from radium was the result of ionization. The effect varied in intensity according to the amount of ionization that occurred and the amount of ionization depended upon the quantity of energy given up to the tissue.

Referring to the theory of greater selective action by radiation of a particular wave length against cancer cells, Dr. Molesworth said that to uphold this view it would seem necessary to prove that cancer cells contained a larger proportion than normal tissue of a given element whose characteristic radiation corresponded to the radiation employed. This theoretical objection to the doctrine of selective action of particular wave lengths was supported by practical experience which might be summed up as showing that the effect upon normal and upon cancer cells depended upon: (i) the even absorption of an effective dose, and (ii) the length of time occupied in obtaining saturation and during which saturation was maintained. The differences of effect produced by radium and X rays could all be explained in this way without dependence upon unprovable theories as to selective action of particular wave lengths. This did not mean that no advantage was to be gained by using radium in one instance or X rays in another. Dr. Molesworth referred to physical and anatomical considerations that justified the use of short wave length X radiation or of highly filtered γ radiation. He also referred to the achievement of an efficient dose at a given depth, and he pointed out that the law of inverse squares was a very important factor in the determination of the depth dose. Dr. Molesworth discussed the depth dose at some length and illustrated his remarks by reference to malignant growths in different situations. In regard to carcinoma of the lip, he said that he had used X radiation in preference to radium in forty cases in his private practice and had obtained complete clearance of the primary growth.

Dr. Molesworth summed up the whole point of his paper by saying that the place of X rays in the treatment of cancer was in reality the same as that of radium at a distance, and that ultimately only economic considerations would determine whether an X ray tube, radium at a few centimetres distance or a radium bomb would be employed for a tumour in any given situation. Anatomical considerations and the necessity of sparing nearby vital organs, as in the case of cancer of the *cervix uteri*, would always give implanted radium a big and exclusive field.

The following were the groups of conditions in consideration of the indications for X ray therapy:

1. Those affording good prospects of cure—skin cancer, lip cancer, testicular growths, lymphosarcoma, lymphoma, cases of breast cancer after radical operation and in which immediate post-operative radiation was instituted.

2. Those affording a chance of cure—breast cancer and its local recurrences, pelvic glands from uterine cancer, thyreoid cancer, pituitary tumours, localized sarcoma (not osteogenic).

3. Those for which palliation and prolongation of life could be provided—recurrent and inoperable breast cancer (except in thoracic or abdominal cavities), cases of uterine cancer in which the pelvic glands were involved (but not a frozen pelvis); prostatic cancer, hypernephroma and its secondary deposits in bone, lymphadenoma, leuchæmia, *mycosis fungoides*, osteogenic sarcoma, ovarian carcinoma, occasionally extensive squamous carcinoma in glands if the mass projected or otherwise permitted of effective cross-fire without subjecting vital tissue to a dose equal to that delivered in the tumour mass.

4. Those in which no benefit could be provided—melanoma, carcinomatous and sarcomatous metastases (except of seminoma and lymphosarcoma) in thoracic and abdominal cavities; œsophageal, gastric and intestinal cancer; glandular recurrences of squamous carcinoma of the skin, lip and mouth; cases in which metastases scattered widely through the body.

Dr. E. S. Meyers proposed the following motion:

> That, in the opinion of this Congress, the time has arrived for a more active cooperation between governments, medical organizations, scientific bodies, and the general public in the prosecution of the Australian campaign against cancer.

In proposing the motion, Dr. Meyers said that action had been taken by the Cancer Conference and a committee had been formed. Dr. Meyers felt that if this motion were passed by members of Congress the imprimatur of the British Medical Association would undoubtedly help the movement. The motion was seconded by Dr. J. Ramsay.

DR. B. T. ZWAR, in speaking to the motion, referred to Dr. Cumpston's remarks on the organization of research work in Victoria. In 1929 Mr. Sampson Handley, of the "Imperial Research Council", visited Melbourne and expressed admiration of the work in progress and hoped that the development of a mechanical organization would not prevent opportunities being made available to individual workers, from whom inspiration was frequently obtained.

Dr. Zwar expressed his whole-hearted sympathy with the motion, which was then put and unanimously carried.

Hospital Problems.

A full session of Congress was held at the Phillip Smith Training College on Thursday, January 18, 1934, to discuss the hospital problems of Australia. DR. D. H. E. LINES, the President, occupied the chair.

DR. E. S. MEYERS (Brisbane) said that in opening the discussion he would briefly outline the events leading up to the meeting.

As indicated in its annual report for 1933, it was owing to the action of the Queensland Branch that all the Branches of the British Medical Association in Australia were using their best endeavours to formulate a hospital policy to which all the Branches might subscribe.

Following the suggestion of the Queensland Branch, the Federal Committee in March, 1933, had appointed Dr. Gifford Croll and Dr. E. S. Meyers as a committee (with power to add to their number) to make a report on the subject of a hospital policy. The following extra members were later appointed: Dr. L. C. Lindon (South Australia), Dr. R. H. Crisp (Western Australia), Dr. R. B. Wade (New South Wales), Dr. D. M. Embelton (Victoria) and Dr. F. W. Fay (Tasmania). This committee had been working continuously since its inception; a majority of the committee were in favour of the suggestion that the subject of hospital problems in Australia should be discussed at the Congress.

Dr. Meyers was sure that he was voicing the opinion of the Committee in thanking the Executive of Congress for setting aside a session for the discussion and for the time and trouble they had taken in making the necessary arrangements for the session.

It might be said that the committee, realizing that they had no easy task before them, were of the opinion that the holding of this discussion would render their task less difficult. In the first place there would be an expression of opinion by various members of the Branches of the Association and, secondly, this expression of opinion would be of great assistance to members of all Branches when the time came for an appraisement of the final report of the Federal Council.

In certain quarters objection might be raised that, as the conditions of hospital practice varied so much throughout Australia, it was impracticable to formulate a common policy. Dr. Meyers did not think this was a valid objection. Even though conditions varied, they would surely find that the principles that should govern the policy would hold in all States. They had, as an example of what might be achieved, the report of the parent Association's proposals for a general medical service for the nation.

Even though they were dealing only with the hospital aspect in their plans, they found that the problem had so many points of contact with all aspects of practice that the solution of the hospital problem would reveal that the difficulties of the larger problems of a general service would, in a large measure, be also solved.

What, then, were the hospital problems of Australia? The different groups affected by them viewed the problems differently. To the general public (whose interests, to an association such as the British Medical Association, were paramount) the problem was one of the provision of adequate hospital accommodation at a cost commensurate with their pockets. To the authorities responsible for the upkeep of hospitals in a world of increasing cost of medical care, the problem was one of keeping cost within such limits that the balancing of hospital budgets would not be an impossibility. To the members of the medical profession the problem was one of rendering service on such conditions that, while the legitimate interests of the profession were conserved, the service rendered to the sick would accord with the honourable traditions established by the profession in the past.

The problem for the Association in Australia was to devise a policy that would take cognizance of all these views and that would, so far as was humanly possible, do justice to all concerned.

If a slogan was needed, it could be: "The best hospitals and the best service that the Australian practitioners can provide."

Time did not permit them to give attention to all aspects of the problem, even as they affected the question from the medical practitioners' point of view; but Dr. Meyers thought that it might be taken for granted that due regard must be given to the claims of all the groups that went to make up the profession. All were affected. They must forget, for the time being, State boundaries; they were all Australian practitioners, from Thursday Island to Hobart, from Brisbane to Broome. In actual fact, the practitioners in remote areas were, for obvious reasons, in much greater need of help in the solution of their problems than their colleagues in the more closely settled parts. The same applied to the States with smaller populations and greater distances. They looked to their more fortunate neighbours for advice and help in their difficulties. This was a major consideration that weighed with the Queensland Branch in deciding to refer the matter to the Federal Council.

Should the Branches be failing in mutual helpfulness, then their case was parlous indeed. This hospital problem was the major one confronting them. On its solution the future of medical practice in Australia depended. They looked to the Federal Council to urge, with all the authority it possessed in the councils of the authorities concerned, the great need of giving attention to these problems

and the necessity for giving heed to the considered opinion of the profession as to the measures that should be taken to arrive at their solution.

It was necessary to draw attention to the fact that there were other workers in the field who had interests in the hospitals, ancillary, if the word was preferred, but most able allies in the fight against disease, the nurses, pharmacists, workers in massage and others. Dr. Meyers was entrusted to bring a message from three of these groups for the consideration of the meeting. It was as follows:

Assuming the medical profession decided upon a policy that found favour with the great majority, what then? This was a fair question for an assemblage such as the present session. How were they going to bring their policy into force? On this aspect of the question the Committee of the Federal Council would need a great measure of help. Were they merely going to define a policy and assume an attitude of *laissez-faire*? Indubitably there were difficulties. Much work had to be done before any result might be expected. It was Dr. Meyers's opinion that there was work for a full-time Secretary to the Federal Council. Even though the larger States might not subscribe to this view, Dr. Meyers would urge the claims of the smaller ones for much needed help.

They were living in times of great and rapid change. Governments in some instances had undertaken experimental legislation. In their wisdom they would decide what form of medical services they considered best. They might have national service, national insurance, municipalization or a form of service in which the basis was the provision for every individual of a general practitioner or family doctor.

Decisions on these matters were not for the medical profession, but for the legislature. The medical profession might influence such decisions, however, and the measure of success would be the measure of the statesmanship of medical politicians.

Dr. Meyers agreed with the policy of Professor Gordon Bell in his Syme Oration of 1933: "Our policy, then, is one, not of dictation, but of cooperation and helpfulness in general hospital matters."

At times, however, offers of help from the medical profession were not accepted and governments had been known to take action which was considered not to be in the interest of the public or the profession.

What action should be taken if a repetition of such mistakes was to be avoided? Was it not essential that the whole profession should be well informed on all the vital points of the hospital problem? Leadership was required. Had they not to look for leadership to the Federal Council? They had spent much time and thought in perfecting the organization of the Federal Council for the very purpose of dealing with matters such as the one at issue. Unquestionably there were still many circumstances preventing the Council from functioning as efficiently as desired, but such difficulties were by no means insurmountable. "If we are to command the end, we must endure the means."

The medical profession's hopes of success, then, must be placed in the Federal Council. The Council should have the assistance of every Branch Council and of every member of every Branch. All the influence that the members of the Branches individually and collectively possessed should be brought to bear to convince those responsible for the destiny of the medical profession that the work it was engaged upon was of national importance and that, come what might, its first objective, as in the past, was public service.

The following propositions were put forward for discussion:

1. Under any system of payment for patients in the public beds of a general hospital, whether the payment is made personally by contributory fees or through payment by the government as the result of taxation or otherwise, is it the right of the medical men to receive payment for the services they render?

2. If it is right that the medical staff should be remunerated for their services, is it politic that remuneration be demanded? In other words, would it be for the good of the hospital and the medical profession and the public generally, if the rightful payment of the medical profession were insisted upon.

3. If it was thought that the medical profession would waive their claim as to payment for patients in the public beds of a general hospital, what safeguards must be introduced to see that they are not imposed upon by people who could afford to pay for medical treatment utilizing the public beds in a public hospital?

4. What means should the British Medical Association take to enlighten our various governments that it is economically unsound for such governments to undertake the wholesale treatment of all and sundry, whether they be rich or poor?

5. By what means can it be made clear to Parliament that a properly conducted community hospital system will very materially reduce the financial burden of the State, and may even turn what is a great financial responsibility into a financial asset, and at the same time be advantageous to the community, the medical profession and the treasury?

DR. F. W. FAY (Hobart) said that it was his privilege to take part in the discussion as the Tasmanian representative of the Federal Hospital Policy Subcommittee. As the first two questions on the agenda paper would be dealt with at length by other speakers he proposed to answer them formally and very briefly and to give most of his attention to the remaining two.

Although the hospital problem had a very important bearing upon out-patients, the time at his disposal would allow him to consider it in its relation to in-patients only.

In reply to the first question, the Tasmanian Branch said yes, but added that if the time-honoured scheme based upon the traditional willingness of the medical profession to give unstintingly its professional services to the poor was to be replaced by one by which members were paid for such services, they might court the disaster of nationalization.

The answer to the second question was that it was politic that remuneration should be demanded from those patients who were able to pay either in part or in full for the services they received.

The answer to the third question was that a system should be inaugurated whereby the ability of every patient to pay, either in part or in full, would be assessed and the payment of the fees thus assessed rigidly enforced.

The answers to the fourth and fifth questions would, he thought, become obvious if they carefully analysed the disadvantages of the existing hospital policy, or lack of policy, which was injurious to governments, taxpayers and the medical profession alike.

Dr. Fay dealt first of all with the disadvantages of the present hospital policy to the taxpayers. He said that public hospitals were first instituted to provide shelter and treatment for the sick poor. Self-respect and a spirit of independence prevented all others from seeking their charitable services. Of late years, however, their original function had been forgotten and they were now coming to be regarded by an increasingly large section of the public merely as places where efficient treatment could be obtained at very low cost. This view was encouraged by certain governments which insisted that the hospitals to which they granted financial assistance should be open to all, irrespective of their ability to pay for treatment elsewhere. This had led to an increasing demand for accommodation in them which in turn had involved heavy expenditure for the provision of buildings to house the increased number of patients. This expense had, of course, had to be borne by the taxpayers. Moreover, since the cheapness of the public hospitals had been one of their chief attractions, many persons who could have well afforded to pay full fees had seen to it that they paid as little as possible. The result had been that many patients did not pay fees sufficiently large to cover the cost of

their maintenance in hospital. The gap between hospital revenue and expenditure thus increased and the wiping out of this deficit was another burden upon taxpayers. The community, however, still contained a certain number of persons whose self-respect would not allow them to seek the charity of the public hospitals. Owing to the desertion of many of their patients to the public hospitals, the private hospitals were compelled to ask higher fees than would otherwise be necessary from those patients who remained to them and who were rendered less able to pay these increased fees by the taxation levied upon them to maintain their equally affluent but less independent brethren in the public institutions. Again, even under the best circumstances the private hospitals had seldom been able to supply really adequate laboratory or other scientific equipment for their patients. The present policy of the public hospitals made them still less able to do so, whereas the latter with the support of the treasury had little difficulty in providing all such necessary equipment. Thus there was the remarkable position that even wealthy patients were often unable without great inconvenience and frequently considerable discomfort to obtain treatment in private hospitals equal to that which was readily and easily available to poor patients in the public hospitals.

In regard to the disadvantages of the present system to governments, Dr. Fay said that it was the duty of governments to provide grants-in-aid for the support of the sick poor in the public hospitals, but since treatment in these hospitals was being sought by a rapidly increasing proportion of the population these grants had steadily become larger and larger. They had now reached such a size as to cause governments serious anxiety. Since the payment of fees sufficient to cover the cost of their maintenance was frequently avoided by patients who were well able to pay in full the cost of their treatment, the position was decidedly uneconomical.

There were also disadvantages to the medical profession. It was the proud boast of the profession that medical practitioners had ever gladly given free service to the sick poor, but they emphatically protested against attempts to obtain such charitable services from members on behalf of persons who stood in no need of charity. Such exploitation not only reduced the incomes of medical practitioners and made it more difficult for them to obtain a living, but also inspired them with feelings of injustice that were not conducive to harmonious relations between them and such patients nor to the performance of their best work. Staff funds and similar schemes for the payment of hospital doctors were mere placebos and did not go to the root of the matter.

Finally, it was not to the advantage of the community that many of its members should not be encouraged in the exercise of self-respect and a spirit of independence and should not be compelled to acquire habits of thrift and foresight.

Dr. Fay then discussed the logical remedy for these disabilities. He said that since nothing could be done to remedy these evils without the assistance of the various governments, it seemed to him to be supremely important that any solution of the hospital problem that medical practitioners might offer should be of such a nature as would commend itself to the legislators. Many members of Parliament regarded the whole question of hospital policy as a very thorny one and they would gladly welcome any excuse for shelving or dropping any measures that might be introduced to deal with it. Dr. Fay thought that medical practitioners would most certainly provide them with such an excuse if their proposals were at all intricate or if all their possible results were not at once clearly apparent. Governments were little interested in professional injustices to doctors, but they were vitally interested in the expenditure of public moneys. Any scheme that the medical profession might suggest for their consideration should therefore be simple and easily comprehensible, should contain nothing that could possibly alienate any section of the electors, and by showing a method whereby national expenditure on hospitals could be materially reduced, should be of such a nature as would make governments eager to adopt it. The *questionnaire* originally circulated among members would doubtless elicit much valuable information concerning their views on hospital matters, but many of the questions asked in it were difficult to understand and many of the answers given were far from unanimous. In Dr. Fay's opinion it would be extremely unwise to present to governments any proposals that attempted to include a majority of the points raised in it. It was far too much to hope that politicians would give the time and trouble necessary to understand thoroughly many of the issues and they would certainly play for safety by opposing such proposals in their entirety.

In his inaugural address the President of Congress had stated that the remedy for the evils outlined lay in the introduction of a system of community hospitals. With this view Dr. Fay entirely agreed. An excellent description of such hospitals was given in an article published in THE MEDICAL JOURNAL OF AUSTRALIA on August 5, 1933. Community hospitals provided for the hospital needs of all classes of the community and were generally divided into three sections. The first section accommodated patients who could pay nothing to their doctors and little or nothing to the hospital. These patients were treated in large wards by an honorary staff appointed by the hospital committee. The second section received intermediate patients who could pay reduced fees for medical services and more or less adequate fees to the hospital. These patients were treated in smaller wards and, together with the patients in the third section, might be attended by any medical practitioner they chose. The third section was devoted to private patients who were nursed in single rooms and who could pay full fees to both doctor and hospital. In cases of doubt an official of the hospital investigated the patient's financial position and determined the section in which he should be placed.

The system of community hospitals was not new. It had been widely adopted abroad, largely because the governments concerned had been quick to realize its financial advantages both to themselves and their communities. In an article published in THE MEDICAL JOURNAL OF AUSTRALIA on November 11, 1933, Mr. A. G. Stephenson had written:

> The best organized state and municipal hospital authorities on the Continent and in America have prepared a complete survey of the requirements of their sick. They know the approximate number of possible indigent cases, the number of lodge and insurance cases, and the number of people who would probably pay full costs of hospital care in a private institution. Think what this means—the hospitals are zoned, the bed accommodation for all classes of the community is known, and duplication and overlapping of effort is avoided.

In the United States of America roughly six thousand hospitals were successfully operating under the community system and even in conservative Great Britain more and more of the public hospitals were being converted into community hospitals. In Australia as long ago as 1928 the Royal Australasian College of Surgeons at its inaugural meeting had recommended the introduction of a system of community hospitals. Last year a similar recommendation had been made to the State Government by the Western Australian Branch of the British Medical Association and its proposals were most cordially received by the Government, the Press and the public. The Tasmanian Branch had at the same time recommended that after all the public hospitals of the State had been converted into community hospitals, they should be controlled by a commission of three which should consist of a whole-time lay commissioner, a part-time medical member (representative of the British Medical Association) and a part-time woman member.

The advantages of such a system were so obvious that he need only mention them. They provided for the medical needs of all sections of the community. The poor received the same efficient treatment as they did at present, while the well to do were able to obtain the privacy, additional attendance and other luxuries which they desired and for which they were willing and able

to pay. The scientific plant which was necessary for the modern diagnosis and treatment of disease, was concentrated at the hospital and was easily accessible and available to all patients without trouble or inconvenience. This had many advantages over the present uneconomical system of erecting expensive duplicate plants, some of which were inefficient and many of which were idle for long periods, in various parts of the area served by the hospitals. The burden upon governments and taxpayers was lightened since the profits derived from the intermediate and private sections could be used either to diminish the loss on the poor patients' section or to provide new buildings and equipment. The profession was no longer exploited since each of its members knew that he was receiving for his services remuneration that was fairly adjusted to the patient's ability to pay.

There were some alleged disadvantages of the community system. It had been stated by some that community hospitals would be unpopular owing to the class distinctions involved in the operation of them. This view was groundless. All patients would enter the hospital by the same main door and with equal courtesy would be conducted to their appropriate sections. All the patients in each section would receive similar treatment and there could be no possibility of jealousies arising, as they sometimes did under the existing system when certain favoured patients were screened off in a corner of the ward and allowed extra privileges. Others had expressed fears that governments would soon show a desire to regulate the financial relations between medical men and their private patients if such patients were treated in a hospital that received a government grant. But no government was likely to run the risk of thus losing a valuable source of revenue, and the fact that the hospitals would be under the control of a commission similar to the one described, should be sufficient to allay such fears.

In conclusion, Dr. Fay said that in Great Britain the Ministry of Public Health and the British Medical Association worked together wholeheartedly to promote the common weal, and he was sure that the link of sympathetic understanding between the British Medical Association and the several Australian governments could with a little tact be welded just as solidly as in Great Britain.

DR. JOHN RAMSAY (Launceston) said that a personal introduction seemed justifiable in view of the successive generations of medical men who "knew not Joseph". The greater part of his life—some thirty-eight years—had been spent in Launceston where, after temporary appointments in Melbourne and Auckland, it had been his fortune to fill the positions of house surgeon, surgeon-superintendent for fourteen years, honorary consulting surgeon and ultimately chairman of the board of management of the Launceston Public Hospital.

During this period of service he had had the opportunity of studying abroad in the United Kingdom, the Continent of Europe, and America on two occasions. As the result of his first experience abroad, some twenty-five years before, he had had the temerity to read a paper at the Eighth Australian Medical Congress assembled in the Wilson Hall, Melbourne, suggesting that the time had come for the consideration of payment to medical men for services rendered to those patients who were able to pay fees, and who had found themselves in the wards of our public hospitals. Straying thus from the path of virtue they stood, or lay, convicted of the crime of "hospital abuse". Still they were only human and were prepared to exercise that erring privilege that was not noxious to their worldly possessions. Were the members of the medical profession more to blame than they? By their conservative attitude in the past towards the functions of a public hospital, had medical practitioners failed to keep step in the march of the times? He had thought so. His sole supporter and himself in that vast hall had had to bear the frowns of their senior colleagues on the dais, which compelled silence and subjection. It could not be denied that the facilities provided for diagnosis and treatment in well-equipped public hospitals were known to and availed of by the public. This state of affairs brought medical practitioners often into conflict with public opinion, and all that they as members of the medical profession asked for was a fair deal.

Many factors had to be considered in relation to the hospital problem. With some of these Dr. Ramsay proposed to deal in the light of his own personal experience in connexion with the Launceston Public Hospital.

First of all, in regard to staffing of the hospital, in Dr. Ramsay's early days the surgeon-superintendent had been in full charge of all the work of the hospital—professional and administrative. This condition had changed to a sharing of beds between the superintendent and honorary medical officers. In the course of evolution the administrative head became a medical superintendent in charge of beds in conjunction with the honorary physician. Some two years before, in spite of the fact that practically none of the medical men of the city were specialists in the true sense (the radiologist was the only specialist), it had been determined by the members of the British Medical Association in the city that specialism should be introduced into the hospital both in the wards and in the out-patient department.

The allocation of the special positions had been mutually arranged on the advice of the senior medical men, each member of the British Medical Association in the city being attached to some special department in the hospital. There was no member of the British Medical Association who was not appointed to a position. The Board of Management had adopted this recommendation of the northern division of the Tasmanian Branch of the British Medical Association.

The result was that, though most of these "hospital specialists" still indulged in some general practice outside the hospital, their functions within the hospital were restricted to their particular specialties. There had therefore been a stimulus in the direction of self-education of some of the originally ill-equipped specialists, and a better spirit had been engendered by that mutual cooperation. Each more recently arrived practitioner was given some position on the staff, usually beginning as an assistant in the out-patients' department. This scheme had its weakness in the unsuitability of certain men for their positions temporarily, but a start had to be made for the general benefit of the community.

It was suggested that when the senior men were in doubt or could not agree in the filling of vacant positions, the services of an eminent medical man on the mainland should be solicited as judge or arbitrator.

In the smaller country hospitals there was greater difficulty in efficient staffing, but some degree of specialism might be possible, even if only in medicine and surgery. This brought Dr. Ramsay to the consideration of the functions of the small country hospital. In the present days of rapid and comfortable transport most of the important medical, and especially surgical, work should be transferred to the large medical centres, except in cases of emergency. How this was to be accomplished would depend on two important factors: (i) The medical conscience realizing truly the limitation of one's ability and efficiency, and (ii) the control of the finances to enforce the carrying out of this principle. As far as the State was concerned a strong director of hospitals—a well paid and efficient medical man—could enforce this, were he free from the trammels of political control.

The practical exposition of this lay in the grading of hospitals which would be financially assisted by the State according to the faithfulness with which the contract was carried out.

Dr. Ramsay then referred to the remuneration of the staff. He said that under the *Hospitals Act* in Tasmania, any patient, whatever his financial circumstances, had the right of admission to a public hospital, and was expected to pay according to his means an amount to the funds of the hospital for his maintenance therein. These amounts were determined by a finance committee which might, or might not, have a direct representative of the medical profession upon it, but which had the advice of the medical superintendent at its disposal. Fees, often inadequate, were also charged for surgical operations. All these fees went to the hospital funds, the honorary

surgeon receiving no remuneration for his services. This, of course, was unjust, but positions on the staff were accepted under the sections of the *Hospitals Act* and so these latter had to be observed.

At the same time some effort had been made to do justice to the radiologist, who was paid the sum of £180 a year as a reasonable remuneration on account of those able to pay, as his services to this class of patient were available outside the hospital. In Dr. Ramsay's opinion the Act required amendment; but in what direction? This question brought him to the fundamental principles on which public hospitals should be administered. They should leave specially constructed intermediate and private hospitals to themselves. Obviously the public hospital was a necessary charge on the finances of the State, and attempts had been made—mostly unsuccessful—to restrict patients of these hospitals to the class of the poor, and of those unable to pay such fees as might be demanded in an intermediate hospital. It was granted that in the largest cities this system could be adopted and a special hospital availed of according to the ability of patients to pay or not. But in smaller communities such facilities did not always exist, and this position could be met only by the admission of all patients into the public hospital. Dr. Ramsay considered that, where all classes were admitted into a public hospital, the honorary system in its strict sense should lapse. There was a lot of nonsense talked about the necessity of segregating the poor from the paying patients in separate buildings before a public hospital should become a community hospital. In most or all hospitals certain wards or portions of them might be allocated to patients able to pay the maintenance fee or more. If there was not the same discrimination as existed when separate buildings were provided, the public was or should be aware of the fact and should accept the existing conditions. As a rule patients were admitted to hospitals on the recommendations of a medical man. Hence it was up to the members of the medical profession to give advice to the patient in this respect. Dr. Ramsay knew of no reason why the members of a hospital staff should have to give their services in an honorary capacity to those able to pay. With wealthy patients not only should the patient be charged similar fees to those charged in private hospitals, or even more (as they had the further assistance of the resident staff), but the medical man attending, the anæsthetist, the radiologist, the pathologist *et cetera*, should have the right to receive private fees. In equity the private pharmacist might even be considered and prescriptions dispensed by him.

Then came the question of the personnel selected to attend paying patients, whether private or intermediate. In Dr. Ramsay's opinion the right of selection of the medical man should be just as free as in private practice. The honorary staff should attend to the poor and to those unable to contribute an adequate amount to the cost of their treatment.

Where was the line of demarcation to be drawn between those from whom medical men should or should not receive remuneration? Its position was an arbitrary one. On the one hand there were those who held the opinion that visiting medical men should be paid for attendances on all patients in hospital. This in charity cases brought medical practitioners dangerously near the nationalization of hospitals. In Dr. Ramsay's opinion the time was not yet ripe for such a radical change, but at the same time he felt the tendency of the age in that direction. All patients need not necessarily go into public hospitals (unless governments so decreed), for a large section of the community would still favour intermediate and private hospitals. Whilst suggesting that for the present it might be wise to limit the payment of visiting medical men to those patients able to pay private fees or the average cost of the hospital bed and a little more, the intermediate cases, he felt that there might be an extension of the principle of payment, when patients paid less than this average cost. When institutions had contracts for the treatment of their clients or employees at a lower rate than average cost, Dr. Ramsay was not satisfied that a moiety of the amount paid should not go to the visiting medical staff. For example, if the average cost per bed were seven shillings *per diem*, would it not be fair that when, say, four shillings *per diem* or over was paid that some small amount, such as sixpence or one shilling *per diem*, should go to the visiting medical men? This amount could be paid into a special fund which could be distributed annually in an equitable manner amongst the medical men who had rendered service. Or, another alternative would be to pay a lump sum annually to each medical man on the basis of the past year's figures.

As local conditions varied so greatly, one might approve of the principle, leaving each hospital to work out the details.

Out-patient department practice presented further difficulties. For the benefit of the public, and also for educational purposes, they had at the Launceston Public Hospital a free cancer clinic on one afternoon a week at which all the members of the staff might attend. No charge was made. Other patients were attended gratis on a signed declaration that they were unable to pay. Others again declared their ability to pay a certain amount, and the hospital officer might demand a statutory declaration.

The penalty for making a false statement did not exceed £20. Such a system put transgressors within the pale of the law and acted as a deterrent from one form of hospital abuse.

Dr. Ramsay thought that out-patients should be those declaring that they were unable to pay the ordinary consultation fees, patients admitted after ordinary accident who did not wish to transfer to a private medical practitioner, and, thirdly, of "consultative" patients sent or brought by a private medical man in order to have available apparatus for diagnosis and/or treatment not existing outside the hospital. In the last mentioned circumstances the consultant should be permitted to receive his fee. The solution in the out-patients' department was, however, far from simple.

Dr. Ramsay said that he had given expression to his opinions chiefly as the result of his experience at the Launceston Public Hospital, and he acknowledged the many difficulties, political and otherwise, that stood in the way of hospital reform.

The chief difficulty in Tasmania was the *Hospitals Act*, under which public hospital boards were operating. He felt sure that any decisions arrived at by the Congress would be helpful to any Government that wished to make amendments to an existing Act. Legislation should require that the obligation of the board to admit any sick or injured person should entail a further obligation of the board, that no injustice was done to the so-called honorary medical officers, who at present did not receive any remuneration for treating even wealthy patients. This was not possible under the present Act, which also insisted (Section 50 (3)) that: "it shall not be lawful for and in consideration of any payment reward or advantage or any promise thereof to provide private accommodation in any public hospital for any patient". This clause should be eliminated, if paying patients were to be admitted along the lines of a community hospital.

Also Section 52 (1) with regard to "Liability of Patients" demanded that contributions by patients should go to the Board. This emphasized the injustice done to the visiting medical men, unless power was given to the Board to collect the fees due to these medical men, and pay out to them. It would be far better and easier, however, in the appropriate cases, for the medical men to make their own arrangements and collect from the patient as in private practice.

Dr. Ramsay's opinion in general was that, except in the larger centres where special provision in separate buildings could be made for the different classes of patients, legislation should permit of public hospitals becoming community hospitals available to poor, rich and intermediate alike, and for services in which (along the restricted lines previously mentioned) the visiting medical men should be allowed to receive remuneration.

DR. J. G. HUNTER (Sydney), speaking on behalf of the New South Wales Branch of the British Medical Association, explained the hospital policy of the Branch as set out in the following statement.

(1) That, as the system of payment in public hospitals for the treatment of the indigent sick by voluntary contributions has changed to that of payments by patients individually or by means of contributory funds, the Association insists on the right of medical practitioners to remuneration for services rendered in such hospitals.

(2) That the Association considers that the visiting medical officers to a public hospital should have representation on the board of the hospital and that the representatives should be elected by the visiting medical staff.

(3) That the Association considers that (*a*) public hospitals should be open to all classes of the community and that each person should pay according to his means; (*b*) public hospitals should provide accommodation for all classes of patients according to their means—public bed, intermediate and private; (*c*) where in the opinion of the board of directors it is practicable, it is desirable that all reputable practitioners should be entitled to render services to intermediate or private patients in all hospitals; (*d*) it is also desirable that in metropolitan hospitals all reputable practitioners should be entitled to render services to intermediate or private patients and that separate buildings or at least separate wards should be set aside for such intermediate or private patients.

(4) That the Association is of the opinion that the finance of hospitals would be best met by (*a*) a hospital insurance scheme—a compulsory insurance scheme to apply to all persons irrespective of income; (*b*) collection of fees from people not insured; (*c*) voluntary contributions—to continue to be sought and to be used—(i) for capital expenditure, new buildings, (ii) to finance research work, (iii) to supply special appliances for investigation and treatment, (iv) for the treatment of the indigent; (*d*) Government subsidy—(i) special subsidy to those hospitals employing special methods of investigation and treatment, (ii) capital expenditure and to supplement the cost of erection of new buildings; (*e*) payments on behalf of patients by the State or any other body, for example, State children, pensioners, public servants injured in the execution of their duties *et cetera*.

(5) That the Association considers that all insurance and similar schemes should provide for in-patient treatment only.

(6) That the Association considers that (*a*) the primary consideration in the admission of a patient to hospital should be the suitability of the case on medical grounds; (*b*) every person admitted to a public bed must satisfy the hospital inquiring authority by statutory declaration that he or she is a fit and proper person to receive gratuitous medical treatment; (*c*) efficient means of investigation into the circumstances of the applicants for relief by means of an almoner or other agent should be employed in all hospitals.

(7) That the Association considers that all in-patients should be classified by the hospital executive according to their ability to pay for services rendered.

(8) That the Association considers that the out-patient department should be mainly for purposes of consultation but that the casualty department should be available in every emergency, and that application for such consultation should be made on a standard form which shall contain a statement of the patient's means.

(9) That the Association considers that (*a*) the system of visiting medical officers to hospitals should be maintained; (*b*) all vacant positions on the visiting medical staff of public hospitals should be advertised both in the medical and lay press, and that such advertisement should conform to the standard of ethics laid down by the Association.

(10) That the Association considers that wherever possible special facilities should be provided at public hospitals for post-graduate study.

(11) That the Association, whilst asserting the right of medical practitioners to receive payment for their services in public hospitals, advises its members to continue the service of honorary attendance to public bed patients, provided that no patient shall be admitted to a public bed who shall be judged by the hospital executive as being able to pay in part or in whole for medical treatment.

DR. A. T. WHITE (Western Australia) said that the hospitals in Western Australia were supported entirely by public subscription with pound for pound Government subsidy. There were no intermediate wards in the city of Perth or Fremantle, but these were provided in country hospitals. The hospitals were managed by a board appointed by local people and approved by the Government. If expenses exceeded income, members of the Board were personally responsible for making good the deficit. In the Perth and Fremantle hospitals the honorary medical officers had recently made an innovation. Accident cases were treated in the hospital as an emergency and, if insured under the *Employees' Compensation Act*, were transferred to private hospitals. The money received in payment for treatment in the public hospitals by the honorary medical officers was put into a general fund which was used for establishing a library and thus did not transgress the honorary status.

Compulsory insurance had been advocated for Western Australia but was violently opposed by the friendly societies, which, however, provided sick pay but not hospital accommodation for their members. There was an insurance company prepared to operate, but it only covered the man of the family. Compulsory insurance would cover wives and children and was therefore advocated. Intermediate hospital accommodation in connexion with the public hospitals was urgently desired because the private hospital accommodation was too limited and too expensive for the majority of wage earners with incomes of between £200 and £300 a year. A hospital tax had been imposed, at present amounting to sixpence in the pound, which entitled all citizens to public hospital treatment. This was gravely abused, as persons of adequate and high incomes were entitled to and did demand free treatment.

DR. LEONARD LINDON (Adelaide) said the agenda paper submitted to the meeting had been submitted to the Hospital Policy Subcommittee of the South Australian Branch of the British Medical Association and had been considered from the Federal and State aspects, though this alliance was difficult. The Branch felt that broad principles should be formulated, by which all Branches should stand in case the Commonwealth should take action, the individual States attending to the details of the individual situations. There were varying conditions in different States. Previous speakers had emphasized the difficulties of the country practitioner, whereas in South Australia the country hospitals were built, equipped and run by the Government, and the country practitioner had at his disposal a small but well-equipped hospital in which the number of charity patients was small, and intermediate and private patients from whom fees were collected, predominated. In the Adelaide Hospital, a Government institution, practitioners were protected as far as possible; persons able to pay were not admitted. Accident cases were treated and if the patients had an adequate income, they were transferred as soon as possible to private hospitals. The agenda paper today asked whether they should continue the honorary system. The South Australian Branch was emphatically of the opinion that they should continue to treat the charity patient free, but that they should assess the ability of every patient to pay and not impose on the benevolence of the honorary medical officers. They had no community hospitals in Adelaide, no voluntary contributory schemes, no compulsory schemes. An insurance company was in operation, also opposed by the friendly societies whose attitude was untenable, since they did not contribute to the hospital treatment of their patients. Dr. Lindon said that the South Australian Branch was of the opinion that no contributory scheme should be supported if it provided only for hospital accommodation of the patients and not for medical attention as well.

DR. J. NEWMAN MORRIS (Melbourne) said that in Victoria the problem had changed since the time when payment was asked from the indigent poor. Now every patient who sought treatment was asked to pay according to his means. In 1923 the estimated cost of beds in

public institutions was three pounds per week, which held today, and every patient was asked to contribute in accordance to his means. He was asked to make a statutory declaration regarding his means, but the declaration was not worth the paper on which it was written. The hospital policy was now controlled by a commission on which there were three medical members, the Branch having been asked to nominate an advisory committee. The basis of payment demanded was the bed cost regardless of the financial status of the patient, even old-age pensioners being expected to pay a proportion of their allowance while in hospital. The commission had made two important decisions: (1) that the public portions of the hospitals where medical treatment was given, free should be open only to the certified indigent; (2) that the certifying authorities should be in the district from which the patients came and not the hospital authorities. The almoner system of investigating the financial condition of patients was of great advantage and would be more fully described at a subsequent meeting.

The out-patient problem was a tremendous one and needed much attention. The Victorian figures were similar to those of New South Wales, reporting an increase of 200% over a time period where the in-patient increase was only 100%, and the abuses of the honorary system were much greater in the out-patient department than elsewhere. It was the hope of the Victorian Branch that ultimately out-patient departments might come to be reserved for consultations in response to the presentation of letters and that they might be supplemented by a dispensary.

The payment of staffs of public hospitals would embarrass the hospitals considerably. At present patients' payments offset about 7% of the cost of maintaining the hospitals and payment of the staff was impossible and inadvisable. It was not to be forgotten that the abuse of public hospitals lay largely in the hands of medical men who recommended for admission patients who should be in intermediate or private divisions.

Nationalization must be avoided and resisted and the voluntary treatment of the indigent remained as a fundamental principle.

DR. B. T. ZWAR (Melbourne) said that owing to time limitation he would limit himself strictly to the agenda paper. To the first question the Victorian Branch emphatically said "no". To the second question the answer was again in the negative. Even in England, where the position had been extensively reviewed, it was not considered politic, and remuneration should not be demanded. In regard to question three, there was undoubtedly abuse of the public hospital system. Figures were quoted for the years 1901 and 1928; between these two years the population had grown from half a million to one million, hospital expenditure had increased from £83,000 to £440,000, hospital admissions from 12,000 to 40,000. After consideration as to the cause of such increase, obviously the method of dealing with the increase was to deal with the cause, which lay in the improvement of the education of the people, their habits and demands for medical attention, and actually there was no remedy. The members of the Victorian Branch of the British Medical Association all gave some service to the sick poor, 55% of them in the metropolitan public hospitals. The Branch had made an extensive survey which showed that if the public hospitals would reserve the public accommodation for the sick poor, it would be sufficient, and the profession thought that the provision for the wage-earner and the better paid citizen should be dissociated from charity. At present any contributory scheme must not carry contractual rights for admittance to hospital, and when patients were admitted to intermediate beds a contributory scheme should make direct arrangement for the payment of the medical officer. Compulsory attention should be given to persons injured in traffic accidents, and direct arrangements should be made for the payment of nurses and practitioners concerned. The establishment of an almoners system for the assessment of the ability of the patient to pay was a great advance and should be encouraged. The *Hospitals and Charities Act* gazetted regulations for private and intermediate beds in public hospitals might be *ultra vires*, so the principles laid down avoided this and were adopted by the Branch in the light of experience.

Dr. Zwar then read the resolutions adopted by the Victorian Branch regarding paying beds in public hospitals. The resolutions were as follows:

1. It is preferable that in large centres accommodation for private and intermediate patients be in hospitals separate from public hospitals, but where intermediate and private hospital accommodation is established in association with public hospitals, such accommodation should be under separate management with adequate medical representation in separate buildings with distinctive names indicating their separate identity.
2. No patients should be admitted directly to these buildings without the written recommendation of a medical practitioner, except in cases of accident and emergency.
3. In the case of a patient who has been admitted to the public portion of a public hospital and who as a result of subsequent inquiries has been transferred to an intermediate or private section, the patient's usual attendant should be notified immediately.
4. The wards in which intermediate and private patients are treated, whether in smaller centres in the country or in large centres (including Melbourne), should be open to the whole profession with adequate safeguards. Medical services in such wards should be subject to the principle of free choice as between doctor and patient; and payment for such services should be a matter of arrangement between patient and doctor.
5. Payments should be in accordance with the intermediate scale of fees already approved by the Council in the case of intermediate patients in country hospitals.
6. Treatment in intermediate wards of hospitals should not be available to patients able to pay ordinary fees.
7. As a general principle the hospital fees charged to intermediate and private patients in paying beds associated with public hospitals should be such as to return only an amount to cover overhead and working expenses and sinking fund; and the fees so charged should not be regarded as a medium of financing the charitable portion of the hospital.

Dr. Zwar concluded by declaring that the only remedy was propaganda, education and the ballot box.

DR. J. V. DUHIG (Brisbane) said that the hospital position in Queensland was entirely different from that in any other State and was also further along the road to nationalization. Hospitals were roughly of three kinds, those supported by voluntary contributions, those depending partly on contributory schemes based on trade groups, and those working under the *Hospitals Act*. The first two were almost extinct. The Act provided that where voluntary subscriptions had dried up, the hospitals should be governed by boards constituted by representatives of the subscribers still existing, local authorities and government representatives. The two latter provided the sinews of war, and there was no provision for medical representation on these boards. The boards budgeted for the year's expenses and the estimates were submitted to the local authorities and, if necessary, were supplemented by the Treasury. The money came from local taxation, and a general tax on incomes for hospitals was suggested, but this was liable to the same abuse as experience in Western Australia had shown. The effect of recent administrative rulings was that any person paying the local charities tax could demand free treatment and get it, though this directly conflicted with a previous departmental ruling of a Labor Government.

The advantages of the system were that the hospitals were free from any financial worry, were well run and well equipped, but, on the other hand, the medical profession was completely subservient to the lay boards and the necessity for honorary services to the truly indigent was small. Also those giving honorary service were tax-

payers themselves and were denied any voice beyond that of any ordinary taxpayer.

A hospital board's interpretation of its functions might and did result in a medical officer's having to treat for nothing persons who paid the hospital tax, irrespective of the patient's resources, or resign. This abuse had to be corrected, and the Queensland Branch earnestly desired unanimity and support from the other States.

DR. C. H. E. LAWES (Sydney) said that in considering the sections of the agenda he felt that in Section (1) the medical profession should lay down as a principle the right to ask payment from all patients. There was no suggestion of the abolition of the honorary system, but he felt that it should be quite clear that the right to payment existed and honorary service to the indigent poor was an act of grace. The Federal Council should be invited to lay down basic principles to be wholeheartedly supported by members in Australasia, for example, the case of Queensland instanced by Dr. Duhig. The support of all States should be accorded to Queensland members, so that their opinions should be upheld and the Government would not be able to staff the hospitals with medical men from other States. He said that contributory schemes working satisfactorily did not entitle the contributor to medical attention, but merely provided for a daily allowance for hospital expenses. In the provisions of the *Hospitals Act* now in operation in New South Wales all compensation patients in hospitals were classed as paying patients, either intermediate or private, and were treated as such. The *Hospitals Act* of New South Wales had undoubtedly created happier and more satisfactory conditions in New South Wales.

DR. C. H. DICKSON (Victoria) said that it was not generally realized that 70% of the population fell below the £300 *per annum* income level, so that hospital accommodation at a rate of two to three guineas a week became necessary if these patients were to pay within their means. In his district an extension of the Bush Nursing scheme had been formulated and a local hospital established with a private in-patient fee of four to five guineas weekly, and a scheme established by which an annual subscription of thirty shillings would admit the subscriber and his family for two guineas per week. A maternity case would be admitted for two weeks for five pounds. This hospital was being run by one hundred and fifty subscribers and by the charity of a local ladies' committee, without any municipal or governmental authority, and was completely satisfactory, well equipped, and financial. The previous speakers had adopted a general attitude that government support was necessary for any scheme suggested. Here was a scheme originated and maintained independently of any State authority, and he would remind the meeting that the citizens themselves were the government. It seemed to him that what could be done in one small district could be extended throughout the Commonwealth.

SIR JAMES BARRETT (Melbourne) said that instances of the abuse of public hospitals by persons whose possessions ran into thousands of pounds were too well known to every member to need enumeration. He thought that Dr. Dickson had put his finger on the essence of the problem and that nursing and hospital accommodation must be provided at a cost which the average man could afford. In Victoria the cost of maintaining the hospitals was greater now than ever before, both in regard to overhead and cost *per capita*. He thought that a hospitals tax, such as Western Australia and Queensland had employed, would teach the States a sharp lesson and prove that the costs would rise much more rapidly than the income from taxation and the increasing deficit could not be overcome. The cost of their hospitals must be within the means of the average citizen.

DR. MARY DE GARIS (Geelong) said that the profession was suffering from the same folly as the rest of the community—unpayable investments (*sic*). The solution of the general community's problem would solve the hospital problem. What they needed to aim at was a fair exchange between doctor and patient, as between other members of the community, and a profit system was untenable. They should not ask a guinea for a pound's worth of work. The study of the essential causes of the present economic condition would show them the solution of the problems.

DR. H. H. SCHLINK (Sydney) said that as he had been a member of the committee which worked out the policy already outlined by Dr. J. G. Hunter, he would say little beyond voicing his approval of that scheme. The whole matter resolved itself into a financial problem. The Governments of the States owned the buildings in which voluntary services were being given. If the profession owned the buildings it would have control of the situation. They could not sink large amounts of money into new buildings, so they must convert the existing buildings in which there were departments for the ancillary services and special equipment and apparatus. He instanced the large sums of money expended on instruments by individual men. If the instruments at a community hospital were in general use, with, perhaps, special or individual instruments supplied by the surgeon when necessary, a tremendous amount of money would be saved. Dr. Schlink advocated separate buildings in a large unit for public, private and intermediate patients. Finally, he felt that there should be sufficient hospitals for each man to attend one hospital rather than waste time, money and energy travelling between different institutions, and that the scheme should serve the interests of the best work of the profession as well as the comfort of the patients.

Dr. Meyers, in reply, said that the discussion had been most stimulating and helpful to the Committee of the Federal Council in furthering its work. Much help had already been afforded by members who had spoken, and he would also like to express the Committee's appreciation of the help received from Dr. R. B. Wade, of Sydney, who had been unable to attend the Congress. He would remark that the scheme outlined by Dr. Dickson, which had taken considerable time before the initial opposition was overcome and success was attained, might cause much greater difficulties in larger centres.

DR. D. H. E. LINES, in closing the meeting, congratulated the Congress on the large attendance, spirited discussion, and constructive conclusions reached.

Public Lecture.

IN a public address, delivered at the Town Hall, Hobart, Professor W. A. Osborne (Melbourne) discussed the life of Napoleon Bonaparte and the French Revolution from the medical viewpoint. The medical aspect of history had received scant attention; yet without the introduction of vaccination by Edward Jenner in 1798 the ravages of disease might have prevented England from achieving success in her industrial period and in her attempts at colonization. Professor Osborne referred to the consequences in history of rain, owing to its effect on the bodies of soldiers and citizens exposed thereto. Rain had played an important part in the overthrow of the reign of terror; a heavy downpour had dispersed many thousands of insurgents. Biographical sketches of various leaders of the French Revolution were given, with special reference to Marat, whom the speaker described as a linguist and a man of science. Professor Osborne illustrated his comments on the physical history of Napoleon by lantern slides. An interesting incident was Napoleon's failure on the notorious 18th of Brumière, when he wished to dissolve parliament by force. His incoherence and lack of control were known to have been the result of an attack of Mediterranean fever. Pituitary disease was responsible for the degeneration evidenced in Napoleon's later years, for his lethargy, his excessive weight, and the failure of what had been a magnificent memory. He died from cancer at the age of fifty-two years, after great physical and mental suffering. Professor Osborne thought that the present generation was too close to Napoleon to form a just opinion of his qualities and achievements.

Combined Meetings of Sections.

SECTION OF MEDICINE AND SECTION OF X RAY AND RADIUM THERAPY.

Pulmonary Tuberculosis.

A MEETING of the Section of Medicine and of the Section of X Ray and Radium Therapy was held to discuss the need for care in the diagnosis of pulmonary tuberculosis. DR. C. BICKERTON BLACKBURN occupied the chair.

DR. D. R. W. COWAN (Adelaide) discussed the need for care in the diagnosis of pulmonary tuberculosis. He offered no apology for what might appear like presumption in the title of his paper. He had learned from his own experience that it was well nigh impossible to diagnose early tuberculosis when one had to rely on symptoms and physical signs. The fact that the practitioner paid too much attention to physical signs was the fault possibly of his teachers—students were still taught to rely too much on physical signs. Dr. Cowan quoted Rivière's well known dictum on the value of the stethoscope. Hern had stated that possibly more good than harm would result if it were possible to prohibit entirely physical examination of the chest. Batty Shaw had also emphasized the importance of examining the sputum for tubercle bacilli whenever any sputum was present, and of the routine use of skiagraphic examination. Dr. Cowan was in agreement with these authorities. If his paper did nothing else than impress on those present the futility of relying on physical examination of the chest in the diagnosis of early tuberculosis, his effort would not be in vain.

The two main reasons for failure to diagnose early tuberculosis of the lungs were: (i) the indefiniteness of symptoms which failed to arouse suspicion in the mind of the physician, (ii) the indefiniteness or absence of abnormal physical signs. Dr. Cowan summarized the methods of arriving at a diagnosis under three headings. In regard to history and symptoms, the history would first arouse suspicion. Once this occurred, the fullest investigation should be made. Dr. Cowan discussed the early symptoms of the condition, and he said that symptoms were more important than physical signs in the diagnosis of early tuberculosis. But diagnosis could not be reached by symptoms alone: they were merely the finger-posts pointing to the need for full investigation. Under the heading of physical signs Dr. Cowan reiterated his statement that absence of physical signs did not negative a diagnosis of pulmonary tuberculosis. Herein lay the cause of most of their difficulties and failures.

Discussing special investigations, Dr. Cowan referred in turn to routine sputum examination, radiographic examination and tuberculin testing. The demonstration of tubercle bacilli in the sputum was the only actual proof of the presence of the disease. But there might be no sputum, or tubercle bacilli might not be found on repeated examination. To exclude tuberculosis on that account would be wrong. A good radiograph was of the greatest assistance and might settle the diagnosis at once, but it was by no means infallible. Interpretation was not always easy. It was not always possible to tell active from inactive lesions. A reaction to tuberculin was a sensitization phenomenon and indicated nothing more than that the patient had been infected with the tubercle bacillus and had become allergic. If the test was properly carried out, failure to react might, with few exceptions, be taken as a reliable indication of the absence of tuberculosis. A general reaction to the subcutaneous test, accompanied by focal signs referable to the site of the lesion, might be taken as an evidence of activity. In a properly conducted test the danger of activation and extension of the lesion was negligible.

DR. COTTER HARVEY (Sydney) read a paper in which he discussed the importance of early diagnosis in pulmonary tuberculosis. He was glad that Dr. Cowan had laid emphasis on the value of radiographic evidence. Dr. Harvey said that when pulmonary tuberculosis was of sufficient extent to produce clinical symptoms, it could be demonstrated on a properly taken skiagram in 99% of cases. Should the first skiagram fail to reveal the condition and should the symptoms persist, the radiologist should be allowed to check his findings. A second "negative" film, taken from six weeks to three months after the first, proved conclusively that the patient's symptoms were not due to pulmonary tuberculosis.

Early diagnosis in pulmonary tuberculosis would be a counsel of perfection for some years to come. It was recognized that many more cases would be diagnosed in the early stages when there was due recognition by the State of the economic and social aspects of tuberculosis. The State should solve the economic problem of the worker by giving him financial aid during his period of invalidity. The cost of this to the State would be less than that of the invalid pension he eventually received, together with the support granted to his family by State or other aid before and after his death. While the obligation rested on the members of the medical profession to diagnose tuberculosis at the earliest possible moment, it was equally important that tuberculosis should not be diagnosed unless it was reasonably certain that no other diagnosis was possible.

Dr. Harvey then discussed some conditions with which tuberculosis might be associated. Referring first to pleurisy, he said that every student knew that pleurisy with effusion indicated a tuberculous infection of the pleura. It was, however, quite common to see patients who had been allowed to lead a normal life after an attack of pleurisy without having been subjected to regular examination. In regard to hæmoptysis, it was still true that hæmoptysis should be regarded as evidence of tuberculosis until another diagnosis had been established. In this connexion Dr. Harvey referred to the so-called dry bronchiectasis, a not uncommon condition with recurrent hæmoptysis as its only symptom. The taking of a bronchogram was a simple and safe procedure and it was inexcusable that these patients should be labelled as tuberculous. Pneumothorax occurring spontaneously was always regarded as tuberculous, but Dr. Harvey was not certain that this was always true. He quoted a case in support of this statement. Anal fistula and fissure *in ano* were also often associated with tuberculosis. Amenorrhœa in young girls as an early sign of tuberculosis was often overlooked. Chronic bronchitis also was a diagnosis often made when tuberculosis was the underlying condition.

In conclusion, Dr. Harvey said that in no other major killing disease was early diagnosis of such supreme importance. In pulmonary tuberculosis early diagnosis more often than not meant arrest of the disease process.

DR. H. R. SEAR (Sydney) read a paper in which he discussed the need for care in the diagnosis of pulmonary tuberculosis from the radiological point of view. He said that errors in diagnosis of pulmonary tuberculosis might be divided into two main groups. The first included the failure to diagnose the disease when it was present, and the second included the erroneous diagnosis of tuberculosis when no tuberculous condition was present. These errors concerned both the clinician and the radiologist.

The failure to diagnose pulmonary tuberculosis when it was present arose from such causes as: (i) The non-realization of the fact that pulmonary tuberculosis might exist for a considerable time before signs were detectable by auscultation and percussion. These mistakes lay at the door of the practitioner who failed to have the chest examined by X rays, and to have the sputum examined, and so forth. (ii) The presence of other lesions masking the presence of the tuberculous lesion. Though screen examination might be extremely useful in such conditions as asbestosis, it was quite inadequate in the diagnosis of

pulmonary tuberculosis, and often quite erroneous. Dr. Sear illustrated these statements by showing several X ray films.

Dr. Sear quoted Wessler and Jaches that there were few diseases in which prompt and accurate diagnosis was of greater moment to the patient than pulmonary tuberculosis. He said that the promptness depended not on the radiologist, but on the medical attendant; it was for him to exclude the possibility of tuberculosis when the symptoms were in any way suspicious. X ray work had shown that the physician should not wait for the appearance of physical signs before having the patient examined by a radiologist. Radiology enabled the physician to see what his ears could not hear. Dr. Sear asked pointedly how it was that while at anti-tuberculosis dispensaries the routine examination of contacts was the rule, this procedure was so rarely followed in private practice.

In reference to the accuracy of diagnosis, Dr. Sear said that it was an established fact that an extremely early tuberculous lesion of the lungs could be detected radiographically. He described the lesion and the appearances it produced on the skiagram. Dr. Sear did not claim that the radiologist was infallible. He probably made as many mistakes as the physician. These mistakes, however, could be reduced in number by cooperation between the physician and the radiologist. In conclusion, Dr. Sear laid stress on the value of progress skiagrams.

The discussion was opened by DR. GUY GRIFFITHS (Sydney), who said that he would like to point out that the finding of tubercle bacilli was an ideal which could not always be achieved, and he recalled one case in which they were found on the twenty-third examination. He thought that cases could be picked up earlier by specific tuberculin testing than by any other means. Some had maintained that the tuberculin tests were not specific. The strongest evidence that it was so came from the veterinary surgeon who had opportunities of testing animals shortly before death. A positive result to a test always confirmed the presence of tuberculosis.

He was always astonished that the Wassermann test was regarded as perfected, while the tuberculin test was used so little. The former was not specific, but merely proved the existence in the blood of certain lipoids. One should also remember, as Dr. D. Cowan had said, that the Mantoux reaction was only one of Koch's phenomena. In some parts of the world it was not of much use owing to the prevalence of tuberculosis, but was more important in Australia than in other parts of the world.

Cases similar to those of Dr. D. Cowan's series were met with everywhere. One or two cases shown by Dr. Sear showed clearly that tuberculosis and bronchiectasis were not separate diseases. Bronchiectasis might be tuberculous, and the fact that it was found should not exclude tuberculosis. Some radiographers maintained that the position of the lesion was of importance in deciding as to its etiology. Dr. Sear had rightly said that this accounted for something, but not for much. His impression was that nowadays infection at the base of the lung was more common than apical infections. A successful diagnosis depended on the close cooperation between the physician and the radiographer. In his opinion, the important thing was to make a diagnosis before the results of clinical and X ray examinations were positive. For this purpose one should sedulously examine all relatives of a tuberculous patient, not only by clinical methods and radiography, but by tuberculin tests. The Mantoux test should be used unless there was any doubt, when the subcutaneous should be employed, up to 1·01 cubic centimetres of old tuberculin being used in adults and corresponding doses in children. Like Dr. Cowan, he had never seen any harm follow tuberculin testing. The tuberculin should, of course, be boiled beforehand.

There were many patients with vague symptoms of ill health, languor, dyspepsia, loss of weight and amenorrhœa who should be tested with tuberculin; and, of course, this test should be applied to all patients with more definite symptoms of lung involvement, for example, pleurodynia. He had never seen a case of pleurodynia not due to pleurisy.

DR. L. HUGHES (Sydney) said that he was interested to notice asthmatic symptoms. It was not usual to find evidence of tuberculosis in children under ten years of age, but he had recently seen two children from one family both of whom had asthma and both of whom showed definite clinical and radiological evidence of pulmonary tuberculosis.

DR. S. V. SEWELL (Melbourne) said that he could not concur with the statement that there was no risk in using tuberculin for diagnostic purposes. He had been attending patients in a sanatorium for twenty years and had made many diagnostic injections without mishap until five years ago, when he saw as a patient a boy of seventeen who had a lesion of the knee joint. The skiagram of his chest showed a completely healed small lesion in the region of the right apex. He was given a diagnostic injection of tuberculin. The boy had been afebrile for three weeks previously. For twenty-four hours he had a temperature of 40·4° C. (105° F.). He was very ill for two weeks, but his temperature came down; he had, however, some head retraction. Within three weeks it was clear that he was in an early stage of tuberculous meningitis, and he died a few weeks later. This might have been pure coincidence, but he thought there was some risk and that one would occasionally have bad results.

DR. S. O. COWEN (Melbourne) wished to ask Dr. D. Cowan on what evidence he based his statement that *erythema nodosum* was indicative of early tuberculosis. Professor Carmalt Jones had described it as the allergic manifestation. In his experience it had been associated more with septic throat infections.

DR. C. B. BLACKBURN (Sydney) said that in his personal experience *erythema nodosum* was very often an allergic response to something, very often to the streptococcus, especially in children, but it might also be due to a tuberculin infection. He recalled vividly a nurse at the Royal Prince Alfred Hospital who had a severe attack of *erythema nodosum*. She was examined closely for any signs of tuberculosis and her chest was examined by X rays, but no evidence of tuberculosis was found. She married soon after. Two years later he saw her after her return from a trip to Java. She was complaining of a cough and her chest was riddled with tuberculosis. On the first occasion she had not been tested with tuberculin, an omission which he later regretted.

Dr. D'Arcy Cowan, in reply, agreed with Dr. Cotter Harvey that in patients with severe toxæmia the power of tissue reactions was lost, but the patient to whom he had referred had, in spite of the result of his X ray examination, appeared extremely well, had been afebrile and had had very few symptoms.

From Dr. Griffiths's remark that the ideal method of diagnosis was to find tubercle bacilli, he thought that he and Dr. Griffiths must be at cross-purposes. What he (Dr. Cowan) had said was that the finding of tubercle bacilli was the only actual proof of infection; it was by no means ideal to wait for that evidence, as by that time the patient's best chance for recovery was gone.

In reply to Dr. S. Cowen, Dr. Cowan said that there were two conditions in which *erythema nodosum* occurred. The first was streptococcal and the second a tuberculous infection.

Among nurses at a certain hospital many cases of *erythema nodosum* had occurred, and all of these nurses gave positive reactions to tuberculin tests. The living conditions were rather poor and they had not been tested before their entry into the institution. Still, he thought the association was suggestive. He admitted that there was a danger of stirring up too great a focal reaction by tuberculin testing. Mishaps occurred, but the danger had been over-estimated.

An apparent focal reaction might, of course, be a mere coincidence. He recalled a patient in whose case the test was postponed for some reason or other; next day the patient's temperature rose to 40° C. (104° F.). Had he performed the test this rise would have been attributed to it. He thought that tuberculin testing was important,

but must, of course, be taken in conjunction with clinical and radiological findings. A speaker at a previous congress had said that tuberculin tests were a waste of time and had referred to the testing of a number of medical students by tuberculin. Those who gave positive reactions did not in any way appear to be less healthy than those who did not react. This type of experiment was, of course, of no value, as the test here was entirely divorced from clinical findings. It could not be expected that tuberculin tests would indicate which persons were going to develop the disease and which had overcome the infection.

DR. COTTER HARVEY (Sydney) said that on one point he agreed entirely with Dr. Sear. He did not use tuberculin and had never regretted it. He preferred to examine his patients again radiologically after two months or at intervals of two months, and thought a normal skiagram after two months would be proof positive that the patient was not tuberculous.

Dr. Griffiths said he would like to make it quite clear that when speaking of bronchiectasis he had intended to convey that tuberculosis was a well established cause of this condition.

Head Injuries.

A meeting of the Section of Medicine and of the Section of X Ray and Radium Therapy was held to discuss head injuries from a physician's standpoint. DR. C. BICKERTON BLACKBURN occupied the chair.

DR. S. V. SEWELL (Melbourne) read a paper on the medical aspect of head injuries. In his introductory remarks he referred to the mechanism and the circulation of the cerebro-spinal fluid. He pointed out that the pressure of fluid in the subarachnoid space was between that of the arterial and venous pressures. In simple concussion there was a definite lowering of cerebro-spinal fluid pressure. This was probably accounted for by shock, with corresponding lowering of the arterial blood pressure. When more serious injury occurred and when bleeding had taken place into the subarachnoid space, the results were quite different. Often the period of shock passed, the cerebro-spinal fluid pressure was definitely raised, and often to considerable heights. It seemed certain that this rise in pressure was mainly due to blood *débris* partially blocking the subarachnoid villi, which had been built only for the passage of a dialysate. Thus the rate of absorption of fluid was materially delayed, while the rise of pressure of the fluid led to its increased rate of formation by the chorioidal plexus. It was important to examine the cerebro-spinal fluid for cells very soon after its withdrawal, because blood cells were broken down fairly rapidly when full in the fluid. Dr. Sewell thought that in addition to being caused by the phagocytic action of cells lying in the subarachnoid space, the destruction of red cells in the cerebro-spinal fluid might be partly due to the high chloride content of the fluid. The products of blood destruction acted as an irritant and caused an outpouring of leucocytes. This should be borne in mind when the cerebro-spinal fluid was examined on the day after an accident, lest a hasty diagnosis of a complicating infection be made.

To a considerable extent one judged the degree of brain injury by the length of the amnesia periods preceding and following the accident. The brain lesion would vary from gross laceration to the subtle change in the ganglion cells associated with proliferation of astrocytes leading to slight gliosis.

In discussing treatment, Dr. Sewell said that when the blood pressure rose after disappearance of shock, there would be a tendency to renewed intracranial bleeding and that it was definitely advantageous in these circumstances to give the patient a dose of morphine. At this stage examination should be made to exclude a depressed fracture or gross focal lesion suggestive of pressure from bleeding.

Dr. Sewell then discussed the removal of cerebro-spinal fluid by lumbar puncture if unconsciousness and irritability were persisting. He emphasized the need for removal of fluid only until the pressure was a little above normal. Lumbar puncture should be followed later on by the injection of a hypertonic solution of sulphate of magnesia into the rectum at intervals according to the condition of the patient. He deprecated the indiscriminate use of intravenous injections of hypertonic solution unless it was quite certain that the intracranial tension was greatly raised. When no actual hæmorrhage had occurred into the cerebro-spinal fluid, the time during which the patient should be kept at complete rest would obviously be much shorter than when hæmorrhage had occurred. Each case had to be treated as a separate problem and no definite rules could be laid down. It was most important to have an explanatory talk with the patient before he was allowed to get up; he should be told plainly the basis of his condition and that headache and giddiness were likely to return if he attempted too soon to do work of any kind.

In conclusion, Dr. Sewell referred to subdural hæmatoma. He said that the diagnosis of this condition was often missed on account of a failure to realize the long latent period that might be associated with this condition. Sometimes the condition of the patient closely simulated that seen in *encephalitis lethargica*. In these circumstances the cerebro-spinal fluid might be quite normal and the history of trauma was of the utmost importance.

DR. H. MAUDSLEY (Melbourne) dealt with the later manifestations of head injuries. He said that it was a monument to modern social and industrial conditions that the milder types of head injuries might give rise to symptoms of a most distressing kind; and Dr. Maudsley thought that the medical profession could not altogether be held blameless for the state of affairs. Dr. Maudsley classified the effects of head injury into two main groups. The first included the direct effects of head injury; and this was divided into: (i) organic neurological conditions, such as epilepsy, paralysis and so forth; (ii) subjective nervous symptoms; (iii) the neuroses and psychoneuroses. The second group included conditions in which the head injury might be an associated or predisposing factor. In this group three conditions were mentioned: (i) a neurological condition, such as neurosyphilis and cerebral tumours; (ii) psychotic states; (iii) anxiety and compensation neuroses and alcoholism.

In regard to traumatic epilepsy, Dr. Maudsley pointed out that mental deterioration was dependent on the severity and frequency of the fits rather than on the severity of the wound. Further, epilepsy was usually a late symptom of head injury; there must, therefore, be considerable organization of the cicatricial scar before epilepsy occurred. Trauma in the region of the motor area might produce definite mental deterioration, often preceded by mania, confusion or delusional states. Dr. Maudsley referred to the medical aspect of chronic subdural hæmatoma. He said that occasionally the first symptom might not occur until several months after the trauma. If a history of previous head injury had been elicited, diagnosis would not be difficult, but a very slight injury in an antero-posterior direction might cause tearing of a vein entering the posterior longitudinal sinus with a slow leaking into the subdural space.

Symptoms common to all head injuries were headaches, dull and accompanied by throbbing and increased by exertion or excitement. Dizziness was fairly common, especially in middle-aged patients. Memory loss was variable and depended on the severity of the trauma and the age of the patient. Alteration of emotional tone was common in all forms of head injury. There was loss of capacity for normal enjoyment without any great intellectual impairment. These symptoms were not necessarily those of a neurosis, but often indicated definite organic cerebral change.

It was surprising that such a small number of head injuries resulted in actual insanity. Only 2% of Eager's patients had developed definite psychoses. It was difficult to dissociate subjective symptoms from the neuroses. Dr. Maudsley believed that the subjective states described by him had an organic basis, whereas the true neuroses were associated with emotional disturbance at the time of the accident. The question of memory of the event might be the deciding factor in diagnosis. The symptoms commonly met with in head trauma of long-standing origin,

apart from the definite neurological and mental changes, were of the so-called neurasthenic type. It was axiomatic that a head injury of a mild type would be the commencing point of a neurosis or even of a psychosis in a psychopathic person.

The question of cerebral tumours following head injury was of interest. Dr. Maudsley held that it was not unreasonable to suppose that an irritation set up by some emotional effect might be the commencing point of a cell proliferation. There was undoubted evidence of the relationship between trauma and tumour of this type.

DR. R. P. MCMEEKIN (Melbourne) stated that he would like to discuss two aspects of this subject. One was the treatment of the so-called neurosis after head injuries. The patient usually complained of lack of concentration, loss of memory, jumpiness, headache, and so on. A number of these cases were definitely organic and could be cleared up by therapeutics. The symptoms were sometimes relieved by rest and dehydrative measures. He knew that Dr. Sewell had had two or three cases where the injection of air had had dramatic effects. He himself had had several cases where the symptoms had cleared up after trephining.

It was sometimes difficult to localize a definite point of injury intracranially. Frequently the development of the signs was not full. The question of direct percussion of the cranium had not been mentioned, and this was, in his experience, a very valuable physical sign. In traumatic conditions the subdural hæmorrhage or subarachnoid cyst was situated close to the cranial bones and frequently in the frontal region. It was quite possible, even in adults, to find a definite alteration in resonance. This required experience, but was frequently extremely valuable.

DR. L. B. COX (Melbourne) was delighted to find that Dr. Sewell did not use intravenous injections of hypertonic saline or of glucose in these cases.

Although these measures might be of temporary value in cases of increased intracranial pressure, they were of little value in head injuries. Some interesting work had been published by Jackson in *The Journal of the American Medical Association* six or eight months before. He reported the histories of twenty patients who suffered from increased intracranial pressure due to head injury. With a view to ascertaining the effect of intravenous injections on intracranial pressure he had succeeded in keeping a manometer in position for twenty-four hours in half of these cases, and in the latter half had performed lumbar puncture repeatedly. He had injected glucose intravenously in varying strengths (20% to 40%). In half of them there was a slight diminution followed by a rise. In the other half there was a steady rise in pressure. In no case was the pressure back to its original level in less than twenty-four hours. Similar phenomena had been found in animal experiments. He thought there was definite danger from the intravenous injection of hypertonic solutions in head injuries.

He observed that when neurasthenic symptoms followed head injury the head injury had usually been slight. The instillation of air into the subarachnoid space sometimes gave dramatic results in relieving post-traumatic headache. Sometimes the relief was only temporary.

DR. E. BRITTEN JONES (Adelaide) said he would like to make a few remarks about subdural hæmatoma. In quite a large proportion of these cases there was no history of head injury. In certain cases anthochromic fluid was found. A third point was that these cases showed remarkable variation in the degree of unconsciousness. The patient might be stuporose in the morning, but later in the day appear quite alert mentally. This was characteristic of these cases and should at once suggest a diagnosis of subdural hæmatoma.

DR. S. V. SEWELL (Melbourne) agreed that the cerebrospinal fluid might show staining in these cases. He would like to emphasize the fact that they were often very chronic cases—so chronic, in fact, that the clinical fracture very closely resembled that found in *encephalitis lethargica*. The question of the colour of the fluid depended on whether the arachnoid would allow the passage of the red cells. When fresh small hæmorrhage tended to occur, one might find staining of the fluid; in such chronic cases one might not happen to perform lumbar puncture at a time when the fluid happened to be stained. The question of the instillation of air reminded him of a patient whom he had seen a few years before who complained of paroxysmal headaches. There was a history of an old fall. It was one of the cases Trotter had described so ably as having a permanent bruised area in the cerebral cortex. It was difficult to decide which was the site of injury. Instillation of air showed a definite filling defect on one side. In these cases it was necessary, of course, either to operate at once or to wait till all the air had been absorbed, which might be a matter of some weeks. During the waiting period this patient had no further headaches. Operation was not performed and no further headaches occurred. Dr. Sewell had had six successful cases; the others were complete failures. The case that he had described was an interesting instance of complete success following what was intended to be a diagnostic measure.

SECTION OF MEDICINE AND SECTION OF PATHOLOGY, BACTERIOLOGY AND CANCER RESEARCH.

The Microcytic Anæmias.

A meeting of the Section of Medicine and of the Section of Pathology, Bacteriology and Cancer Research was held to discuss the microcytic anæmias. DR. C. BICKERTON BLACKBURN occupied the chair.

DR. C. T. CH. DE CRESPIGNY (Adelaide) read a paper entitled: "Microcytic (Hypochromic) Anæmia". He said that ten years ago three forms of anæmia were recognized: the macrocytic or primary anæmias; the microcytic, hypochromic or secondary anæmias; and the aplastic anæmias. In 1926 Minot and Murphy had published their work, and the studies of Castle and Strauss on the gastric factor in Addisonian anæmia gave a great stimulus to the investigation of nutritional factors in the cause of anæmia. During the last few years Witts and others had done great service in bringing about a better understanding of certain types of microcytic anæmia, especially in regard to iron absorption, digestive function and nutrition.

The condition known as primary hypochromic anæmia was almost confined to females. It might begin at any time between the age of twenty and the menopause. Without treatment it persisted with variations in intensity. The symptoms were those of anæmia, some gastric disturbance perhaps, with gastric discomfort and intestinal upset, and usually menorrhagia. The nutrition was usually fairly good. Dr. de Crespigny described the symptoms in some detail. He went on to say that the Van den Bergh test gave no reaction—there was no evidence of hæmolysis. The blood showed a varying degree of hæmoglobin deficiency. The percentage was seldom as low as 30; usually it was between 50 and 65. The number of red cells might be but slightly reduced. Often it was about normal; occasionally the red cells numbered more than five million per cubic millimetre. The red cells were usually smaller than normal (microcytosis); they were often normal in size, but had pronounced central pallor (hypochromia). The white cells showed no constant change, but were usually fewer than in health. Analysis of the gastric juice revealed a normal hydrochloric acid curve in few cases; in many hypochlorhydria was present, and in most achlorhydria. The complaint was a disabling but not a fatal malady in its ordinary form. The frequency was considerable. Of 57 consecutive cases of severe secondary anæmia in adults of both sexes in the Adelaide Hospital, thirteen were of the microcytic type, and all occurred in females.

Dr. de Crespigny described a typical case of microcytic anæmia and one of the Plummer-Vinson syndrome. He said that in the latter condition the spleen was said to be enlarged in a large percentage of cases. This had not been his experience. Witts regarded cases of primary

microcytic anæmia with enlarged spleen as forming a group to be separated from cases of Banti's disease.

Dr. de Crespigny discussed the relationship between the failure of hydrochloric acid secretion and the anæmia. He said that it was definite that the subject of this type of anæmia seemed to be unable to absorb iron in sufficient quantity from an ordinary diet, but rapidly recovered from anæmia if large excess of iron was supplied. It had been shown experimentally that the absorption of iron was facilitated by the acidity of the duodenal contents. That the intrinsic factor of Castle was present in these cases had been proved by Witts. The use of dilute hydrochloric acid in addition to iron did not seem to make recovery more rapid, nor did liver extract. It seemed to Dr. de Crespigny probable that, although the most readily demonstrable defect in gastric secretion was the lessening or absence of hydrochloric acid, this was only one fault in the conditions necessary for iron absorption. Just as in Addisonian anæmia, hydrochloric acid was usually lacking in the gastric juice, but was not the missing hæmopoietic substance, so, he believed, in achlorhydric anæmia it was not the absence of hydrochloric acid that accounted for the anæmia. In regard to pregnancy, Dr. de Crespigny, after discussion, concluded that pregnancy might depress gastric and other functions so as to cause microcytic or macrocytic anæmia; or that it might, by its extra demands, bring about anæmia in an already achlorhydric patient or in a patient who might have a normal hydrochloric acid curve, but whose blood-forming capacity had been overtaxed.

Regarding the treatment of microcytic anæmia, Dr. de Crespigny referred to a discussion reported in *The Proceedings of the Royal Society of Medicine* in March, 1933. He pointed out that ferrous salts were acknowledged as being by far the most potent remedy. Liver extracts, organic preparations of iron and the ferric salts were of little value. The most effective preparations were Blaud's pill, freshly prepared and given in doses of four grammes (one drachm) every day; ferrous carbonate in powder form, 1·2 grammes (twenty grains) three times a day; iron and ammonium citrate in doses of nine grammes (one hundred and fifty grains) daily; and reduced iron in doses of one gramme (fifteen grains) three times a day. Treatment with iron should be continued while there was any tendency to relapse.

In conclusion, Dr. de Crespigny referred to the nutritional anæmia of infants. He said that it was possible that maternal nutrition might be indicted for nutritional anæmia in infants, but experimental proof of this was not forthcoming. It was established, however, that: (i) a milk diet, whether of human or cow's milk, was so deficient in iron that it produced anæmia if no other source of iron was forthcoming; and (ii) a fœtus had a natural tendency to store iron in its liver to tide over the milk diet period and prevent too large a fall in its hæmoglobin content during lactation. There was clearly a heavy drain on the iron stores of the mother during the latter months of pregnancy, and it was reasonable to infer that this constituted an important cause of maternal anæmia at the end of pregnancy. Moreover, it was specially necessary to supply the mother with an adequate blood-forming diet during the latter months of pregnancy to enable the fœtus to store enough iron to last during the milk-feeding period.

DR. A. W. HOLMES À COURT (Sydney) said that it was clearly recognized that the term microcytic anæmia was applicable to conditions in which an anæmia of the microcytic type was present, due to disturbances of red cell formation which might result from varied causes. Not only was simple achlorhydric anæmia (so-called) recognizable as a definite clinical entity, but a microcytic reaction of the bone marrow might be produced: (i) in relation to chronic infections, such as bronchiectasis or typhoid fever; (ii) in relation to chronic intoxications; (iii) in relation to cardio-vascular disease; (iv) in relation to carcinoma. The anæmia resulting from chronic hæmorrhage might also assume this type, as might also the blood state in hookworm and other conditions.

From the clinical point of view knowledge of the anhæmatopoietic anæmias had been crystallized by the work of Witts. His well known diagram of erythrogenesis had been helpful in stressing the fact that these anæmias were eventually nutritional in origin, and due to imperfect blood formation, dependent upon the deficiency of essential substances. Simple microcytic anæmia was commonly due to iron shortage caused partly by deficient food and partly by defective absorption from the alimentary tract. The disease was apparently found in women in the child-bearing period; it was aggravated by pregnancy and tended to amelioration at the menopause. It was an astounding fact that so little attention had previously been given to the condition, which was now recognized as comparatively common, although the complete clinical picture, with brittle spoon-shaped nails, fissures about the mouth, glossitis, dysphagia, and deficiency of gastric acid, might not always be observed, particularly in the milder cases.

Careful search through the out-patient department of any hospital was likely to reveal cases of this disease, the patients usually suffering chronic subnormal health, the basis of which had frequently escaped recognition. It was obvious, moreover, that various types of anæmia due to a disturbance of erythrogenesis might occur in a variety of nutritional and digestive disorders, in many of which failure of gastric secretion and intestinal absorption were the essential factors. It had become possible to explain these anæmias by the starvation of the organisms of the materials necessary for blood formation. It followed, therefore, that treatment depended upon the adequate supply and absorption of these factors, which had been shown to be iron, copper, thyroxin, vitamin *C*, in cases in which the anæmia was of the microcytic type.

There still appeared to be a general appreciation of the importance of the rôle played by the various factors mentioned, and it was not infrequently found that expensive preparations of liver and stomach extracts were prescribed, whereas the sphere of usefulness of these substances was restricted to arrest of development of corpuscles at a stage producing megalocytic anæmia (pernicious), and that correction of digestive disorder and massive doses of iron were the appropriate means of dealing with anæmias of the microcytic type. The practice usually adopted was to employ reduced iron, the ferrous salts, or the scale preparations in relatively large amounts over a long period of time. In Dr. Holmes à Court's experience the most satisfactory method seemed to be to order a saturated aqueous solution of iron and ammonium citrate, one-half to one drachm, in mannite twice a day. Not infrequently iron in these large doses had tended to produce bowel disturbance, when recourse had to be made to *pilula ferri* in doses of 4·0 to 6·0 grammes (60 to 90 grains) daily. Hydrochloric acid was employed in cases in which there was deficiency in gastric acid. The modern concept of the anhæmatopoietic anæmias as diseases due to failure of nutrition or absorption marked a decided advance in the knowledge of these conditions and had placed the treatment on a rational basis.

DR. S. O. COWEN (Melbourne) said that as a preface to his brief contribution to the discussion he would like to pay a tribute to the perspicacity and clinical acumen of one of his old teachers at the Melbourne Hospital, Dr. J. F. Wilkinson. Twenty years ago and more he had taught that in secondary anæmias, of whatever cause, iron had to be given in massive doses. The dose he had recommended was five or six Blaud's pills three times a day after food. To Dr. Wilkinson's old pupils, then, the modern practice of giving huge doses of iron came as no surprise.

Dr. Cowen had been particularly interested in those cases of hypochromic anæmia which presented the Plummer-Vinson syndrome. They were relatively common and were often betrayed by a sign not much stressed in the literature, cracks and fissures about the corners of the mouth. Patients who presented such lesions would often, on direct questioning, admit to mild dysphagia, which would otherwise have passed unnoticed. Treatment with iron was strikingly successful in this type of hypochromic anæmia. In more advanced cases the dysphagia dominated

the clinical picture and the anæmia was easily overlooked. Some months before there had been in the wards of the Melbourne Hospital a patient who, four years previously, had been subjected to the operation of gastrostomy for supposed carcinoma of the cardiac orifice of the stomach. Investigation showed that the condition was one of hypochromic anæmia and that the dysphagia was not dependent on an organic gastric lesion. Six weeks of intensive iron treatment had abolished her symptoms and the gastrostomy wound was closed. She had since remained well. Dr. Cowen laid stress on these cases of the Plummer-Vinson syndrome because their treatment had, in his experience, been so very satisfactory.

Graham and Johnson, in *The Quarterly Journal of Medicine*, Volume XXV, 1932, stated that:

> The evidence so far brought forward suggests that the disease is primarily one of the mucosa of the mouth, pharynx and œsophagus, with resulting dysphagia, and that the anæmia is secondary to the deprivation and restriction of food which necessarily follow.

Dr. Cowen found it difficult to believe that this was so; in several of his own cases the dysphagia had been relatively slight and the deprivation of food negligible. More probably the combination of anæmia and dysphagia constituted a clinical entity which was distinct from other varieties of hypochromic anæmia. As bearing this out, the interesting observation of Graham and Johnson might be quoted, that in five of their six cases the corpuscular fragility was slightly but definitely increased. On the basis of this finding they suggested that the anæmia was not due to the ordinary causes of secondary anæmia and was not identical with the chronic microcytic anæmia of Witts. In the case referred to by Dr. Cowen the fragility had been normal. The point was one which required further investigation.

Dr. Cowen's feeling was that, as time went on, they would separate other entities from the heterogeneous group of conditions at present classed as hypochromic anæmia. For example, he felt sure that some cases which conformed in their obvious features to Witts's chronic microcytic anæmia did not respond to iron efficiently administered, despite the absence of a septic cause or septic complications. Useful as the conception of idiopathic microcytic anæmia had been, they should therefore regard it, not as a single disease, but merely as a provisional label for a group of clinical entities, the isolation of which must be their eventual aim.

It was, Dr. Cowen thought, not wise to draw too close an analogy between pernicious and hypochromic anæmia and to refer to the latter as a deficiency disease. If it were so, why should such an enormous dosage of iron be necessary? Some very recent work of Mettier, Kellog and Rinehart (*The American Journal of the Medical Sciences*, Volume CLXXXVI, 1933) was most interesting in this connexion. They had shown that a diet containing 16 to 20 milligrammes of iron (as compared with the normal maximum of 10 to 12 milligrammes) effected no improvement in these cases. But if the same diet was predigested in an incubation with pepsin and dilute hydrochloric acid before being ingested, improvement rapidly followed. One could not but conclude that the deficiency lay, not in the iron intake, but in its digestion or assimilation. But as yet no constant defect had been found. Achlorhydria was common, but not by any means invariable. Much work remained to be done, and Dr. Cowen's own feeling was that the solution would be found in lack of an intrinsic factor rather than in the quantity of iron consumed. The same scepticism was implicit in the efforts of many workers to prove that the deficient substance was manganese or copper or some other impurity ingested in minute quantity with the iron, but so far none of these substances had been convicted of a causal rôle in hypochromic anæmia.

Dr. Cowen said that he offered these criticisms in no carping spirit, but rather in the belief that they had yet much to learn as to the differentiation of anæmias at present lumped together under the title of idiopathic hypochromic anæmia, and as to the cause of the faulty metabolism of iron.

DR. S. SEWELL (Melbourne) said that the full description of the condition already given did not need amplification. Neurological conditions were not common in this form of anæmia. He had seen, however, two cases of subacute combined degeneration with paræsthesia and involvement of proprioceptive fibres rather than of epicritic fibres. Both patients had marked microcytic anæmia. The peripheral nerve involvement had cleared up more rapidly on liver followed by iron than with liver alone. He also instanced the case of a patient with microcytic anæmia who had not improved on iron alone. She was the daughter of a woman exhibiting definite myxœdema, and although the patient did not show clinical signs of subthyreoidism, she improved enormously when she was given 0·06 gramme (one grain) of thyreoid extract three times a day without any further increase in the iron dosage. He felt that the epithelial changes might be a product of thyreoid deficiency in this anæmia.

Dr. Sewell also recalled that over thirty years ago Dr. Wilkinson, of Melbourne, was using hydrochloric acid and iron in doses of 5·4 grammes (ninety grains) a day in cases which he called pseudochlorotic anæmia. He instanced the case of a patient treated for over forty years who never had a hæmoglobin value above 75% and whose mother suffered from myxœdema. The patient had remained perfectly well until a gall-bladder operation was performed, after which six transfusions were given at intervals, and after four months enormous doses of iron. The patient's count steadily fell and she died of an aplastic anæmia. Microcytic anæmia was but part of a symptom complex and the thyreoid factor was important.

DR. J. V. DUHIG (Brisbane) said that he would like to point out that the administration of iron could not be regarded as a substitution therapy as thyreoid or liver might be. It must not be forgotten that pernicious anæmia in the later phases might become an iron deficiency anæmia. A patient's condition might improve for a short time on liver and then come to a standstill on account of the lack of iron for further blood building; and, if an iron deficiency occurred, why did these patients not show microcytosis. He pointed out that in simple starvation, in spite of the withdrawal of vitamins and minerals, the patient did not develop scurvy or pellagra, nor did he develop microcytic anæmia. If recovery did not take place, copper might be necessary. One missing substance was not the whole story. The action of iron was rather a supplementary action similar to the action of the varying amino-acid in the protein complex.

DR. L. B. COX (Melbourne) said that microcytic anæmia was not to be considered a new disease. In 1919 Dr. Gullard had shown a series of patients treated with large doses of iron. Witts's description of such cases was not to be considered new.

DR. PHYLLIS M. ANDERSON (Sydney) said that the anæmia of the new-born was frequently microcytic in type. Babies with an inadequate store of iron in the liver might exhibit physiological jaundice which would fade, to be succeeded by a marked pallor, falling red cell count and low hæmoglobin. Transfusion and iron therapy supplied the necessary building stones and recovery was prompt. The mothers of some of these children had been shown to have a microcytic anæmia and hypochlorhydria, thus accounting for the lack of stored building stones for hæmoglobin in the children. Dr. Duhig had raised the point of the development of a microcytic phase in pernicious anæmia. Dr. Anderson had had no experience of the adult disease, but in untreated cœliac disease of children a hyperchromic anæmia existed on account of the lack of absorption and storage of the intrinsic factor of Castle. When this had been corrected by dietary, a microcytic phase might appear. She had records of an untreated case in which the Price-Jones curve showed an increase to the right (a macrocytic phase) and another record from a child who, after eleven months' treatment, died of an intercurrent infection, in whom the Price-Jones curve was moved to the left—the red cells were smaller than normal.

She felt that these cases, in conformity with the diagram of the maturation of the red cell evolved by Witts and demonstrated by Dr. Holmes à Court, showed it to be a working hypothesis supported by fact.

DR. E. A. TIVEY (Sydney) said that he had used preparations of iron for injection in treatment of these cases and had found quick and brilliant results. The use of large doses of iron by mouth seemed to him crude, a large amount being excreted in the fæces and but little absorbed. He asked if any facts were available as to the proportion of iron administered by mouth which could be recovered from the bowel.

DR. A. R. SOUTHWOOD (Melbourne) referred to the case described by Dr. de Crespigny in which hæmatemesis and menorrhagia were noted. He wondered if these were the result rather than the cause of the anæmia, and if Hale-White's gastrostaxis patients were not suffering from acute gastric ulcer, but from the result of an existing anæmia. He suggested that, as in hæmochromatosis, the tissue cells had an avidity for iron, the opposite condition, namely, an aversion of the body cell to iron within its cytoplasm, might be the basis of this condition.

Dr. de Crespigny, in reply, said that he felt many questions had been raised which were impossible to answer. He quite agreed with Dr. Cowen that the enlargement of the spleen was a variable factor.

The disease was not new nor clearly defined, since the true cause of iron metabolism in the normal person was not completely understood. For example, they did not know the fate of the split iron molecule before it was rebuilt into hæmoglobin, the reason for the deposit of hæmosiderin in the reticulo-endothelial system and in the cortex, but not the medulla of the kidney. He thought that Dr. Duhig's point as to iron therapy leading to cure in pernicious anæmia might be verified by lack of iron being demonstrated *post mortem* in the liver in fatal cases. He thought that the development of microcytic anæmia in pernicious anæmia was quite a common occurrence; during the remission stage the red cells increased more rapidly than the hæmoglobin. Simple microcytic anæmia was the new name for a well known disease. People had treated but not named the condition, even as Swift had described and named pink disease, which had long been treated. The metabolism of iron in infants was not fully understood and he did not think the anæmias of the new-born wholly nutritional. He thought that iron as an injection was not necessary and he did not use it. Thyreoid extract, he felt, had a dynamic influence in the absorption of iron. Focal sepsis, he was glad to note, was no longer advanced as a cause for this condition.

In conclusion, he felt that, although not complete, the work of Witts had given them a profitable scheme on which to work.

Renal Function Tests.

At the same meeting of the Section of Medicine and of the Section of Pathology, Bacteriology and Cancer Research DR. CHARLOTTE I. GAMMIE (Sydney) read a paper entitled: "A Comparison of the Urea Concentration Test and the Urea Clearance Test in Pregnant Women." She said that she had made an attempt to determine which of these two tests gave a greater insight into renal efficiency. The total number of tests done on 146 patients was 159. Most of the patients were gravid women who at term or early in the puerperium had manifested signs and symptoms of renal impairment. The patients included thirteen normal women on whom tests were done in the last month of pregnancy, after they had been on hospital diet for at least a week. She said that her data showed clearly that the urea clearance was of less value than the urea concentration test. She had been unable to confirm Van Slyke's contention that the standard urea clearance was practically constant in an individual over a wide range of experimental conditions. The range had been found greater than ± 10% in 91 out of 159 cases, in 57·2%, even although both tests were done on the same day. In the course of the investigation it became apparent that the metabolism of urea during the last months of pregnancy showed certain anomalous features when compared with its metabolism in non-pregnant women. The cause of this anomaly would be further investigated.

A preliminary statistical survey of the results of the urea concentration test in normal pregnant women indicated that the kidneys during pregnancy did not concentrate urea with the facility that obtained in normal non-pregnant subjects, but in spite of this the blood urea was lower in pregnant than in non-pregnant subjects. This was another anomaly of pregnancy.

Dr. Gammie said that she had also reached the conclusion that the estimations of blood creatinine and cholesterol were of no value in determining the presence or absence of acute renal inefficiency in pregnancy.

DR. W. J. J. JOHNSTON (Melbourne) said that the Van Slyke test had been tried out but not followed up. The general conclusion from some fifty tests tried in forty cases bore out the general concept of Van Slyke on the progress of glomerular nephritis, but its use in prognosis was not any greater than that afforded by MacLean's urea concentration test. There were some anomalous results and the figures were no greater help than clinical observation. MacLean's urea concentration factor, namely, the ratio of urinary urea to blood urea, was simpler and as much help. Fishberg, in his book, commented that the factors concerned were similar to those in Ambard's constant, and held that the same limitations applied to Van Slyke's clearance.

DR. PHYLLIS ANDERSON (Sydney) said that she, too, had attempted to collect figures calculated according to Van Slyke's method. In children the correction for volume in relation to body size had to be calculated, using Dubois's formula for surface area. This resulted in an increase of calculated volume up to as much as one and a half times the volume recorded. As a general rule, even in cases of chronic nephritis in children the blood urea was usually low in children under five years of age, in whom a larger carbohydrate diet was used, and, as Dr. Gammie pointed out, the size of the denominator was the determining factor in the resultant figure. Usually it was found that the figures were not consistent and that the urea concentration was of more value, so that the tedious and complicated calculation had not been established as a routine. She congratulated Dr. Gammie on the detailed excellence of this original and valuable piece of work.

DR. S. F. MCDONALD (Brisbane) asked Dr. Gammie why, in those cases in which there was a relatively high blood urea and a normal urea concentration test, she considered that there was normal or satisfactory kidney function, and whether she considered the urea concentration test or the blood urea to be the more important.

DR. O. LATHAM (Sydney) asked Dr. Gammie if she had expected changes in the blood creatinine in cases in which there was such a very small variation in the urea concentration test. He understood that rises in the blood creatinine were of very late occurrence in damaged kidneys.

PROFESSOR W. A. OSBORNE (Melbourne) said that, speaking as a physiologist, he was surprised that clinicians should single out urea as a material suitable for accumulation tests. Urea slipped into the red corpuscle, it slipped into fluids; indeed it was difficult to get a membrane by which it was not permeable. It was a straggling molecule and had great power of escape. Was not the absence of uric acid from the urine the first clinical manifestation of nephritis? He reiterated his surprise at the evidence of accumulation of such a diffusible substance being chosen as an evidence of damaged kidney function.

DR. BICKERTON BLACKBURN (Sydney) said in reference to the creatinine question he had seen a child with suppression of urine for five days after the removal of the appendix. When he saw her, the blood urea was 230 milligrammes per 100 cubic centimetres, the blood creatinine 7 milligrammes per 100 cubic centimetres. Decapsulation of the kidney was performed and normal function was reestablished, and the patient was perfectly well some years later.

He congratulated the section in having such an admirably complete piece of original work put before it.

Dr. Gammie, in reply, thanked Dr. Johnston and Dr. Anderson for offering opinions similar to her own, since the American journals had nothing but eulogy for the test. In reference to the blood urea, she said that the estimations quoted were made two hours and forty minutes after the patient had taken 15 grammes of urea. In these circumstances she found that the blood urea would frequently rise up to 50 milligrammes per 100 cubic centimetres. The fasting value in these patients did not show any significant rise. The blood creatinine estimations had been done as a continuation of the existing routine and not with the expectation of finding any significant figure, and had been discontinued. Dr. Gammie said that she could not answer Professor Osborne's suggestion, but that further work was being done. She felt that a storage of urea took place in the pregnant patient, possibly in the amniotic fluid, and this had yet to be determined. She thanked the Section for the generous reception accorded to her paper.

SECTION OF PÆDIATRICS AND SECTION OF PUBLIC HEALTH, PREVENTIVE MEDICINE AND TROPICAL HYGIENE.

A MEETING of the Section of Pædiatrics was held in conjunction with the Section of Public Health, Preventive Medicine and Tropical Hygiene. DR. JOHN DALE occupied the chair.

The Pre-School Child.

PROFESSOR HARVEY SUTTON (Sydney) read a paper on the pre-school child. He said that the pre-school period of life might be taken as extending from the first to the sixth birthday, or from the twelfth to the end of the seventy-second month of life. During the early years of life rapid physical and mental progress took place. At the beginning of its second year of life the child was passing through the transition from an exclusively milk to an increasingly varied and adequate, but unfortunately so often unbalanced and incomplete dietary. Nutritional disturbances formed one of the most important pre-school problems. At this time the child was learning to walk and it was becoming interested in its body as in a machine. Habit formation was the main objective of existence, and bad habits were commonly formed. Movements were incoordinate. It was not surprising that in this transition stage, when the eyes were defective, failures in the establishment of parallelism occurred and squint developed. The child learned to imitate sound and learned language with surprising celerity.

During the pre-school period allergic phenomena showed themselves. "Hives" occurred commonly in summer, and asthma, the allergic response of the respiratory tract, most often began. Professor Sutton said that it was possible that the beginning might not rarely be dated even as early as the first year of life, and that spasmodic croup, that diagnostic horror to the children's doctor, was really a precursor of asthma. It was possible that whooping cough, so common in the first and second years, might start off that spasmodic tendency.

The most important function of this age was the development of immunity. With its mother's milk the child imbibed protective substances against many human infections. Cow's milk could not be humanized from an immunity point of view. As the immunity of maternal origin was lost, so the curve of incidence of infective disease rose to a peak in the pre-school period. The chief susceptibility, the chief incidence and the chief fatality in diphtheria and scarlet fever, belonged to the years one to five. This phenomenon was, as Dudley had shown, a reflex of the degree and intimacy of contact. The smouldering fire of infection was kept alive by carriers. Dudley's work had shown, however, that the carrier might be a blessing in disguise—he might supply an immunizing dose insufficient to produce the disease. In the pre-school period was pitched the general battle with the common infectious diseases—measles, diphtheria, scarlet fever, poliomyelitis and also non-fatal forms such as German measles and varicella. Not all infections, however, had to be encountered, for acute rheumatism, mumps and septic associations were characteristic of the school period.

DR. JOHN DALE (Melbourne) said that contact with infection was one of the interesting features in the life of the pre-school child. No child should pass into its second year without immunization against diphtheria. Anatoxin was used for small children and no harmful effects followed, whereas, in his experience, 90% of the children thus treated became immune. Much the same attitude should be adopted in regard to measles and whooping cough. It was a well known fact that infant mortality always increased during whooping cough epidemics. He thought that at the first hint of pertussis the child should be given vaccine. Doctors should try to educate parents and allay their fears in regard to vaccination. Dr. Dale also made reference to the use of immune serum in measles.

The feeding of the pre-school child was undoubtedly an important consideration. The hygienic branch of the Public Health Service was now concerned with seeing that the child got an adequate and proper diet; when this was done children would show improvement, even in the presence of tonsils and adenoids, dental troubles, and the various symptoms grouped together under the term malnutrition.

DR. JEFFERIS TURNER (Brisbane) expressed a wish to hear some conclusive evidence of the definite value of vaccine as a prophylactic in whooping cough. If it was valueless in this regard, it was more so as far as treatment was concerned. He referred to the large drop in infantile mortality in Queensland since the establishment of infant welfare centres. He had read recently in THE MEDICAL JOURNAL OF AUSTRALIA that it was no one's work to look after the pre-school child. As a matter of fact the work was exactly similar to looking after the infant. It consisted mainly of advising and educating the mother. Medical men should do this as far as they could, but on a large scale their field was limited and the help of nurses should be invoked. The first essential was to teach mothers how to feed their children properly; the doctor had the knowledge of the underlying principles, but the nurse had the practical knowledge in this direction.

The prevention of infections, especially the respiratory or droplet infections, was another important measure in the care of the pre-school child. At the present time parents often seemed to take their children unhesitatingly to places such as picture shows where they could acquire infection.

Physical Defects in the School Child.

DR. JANET GREIG (Victoria) read a paper dealing with physical defects in the school child. She began by stating that in any statistical discussion on defects in children it was absolutely necessary to have a standard as to what should be considered abnormal. In the Department of Education in Victoria general instructions had been drawn up for the use of school medical officers, but at the same time great latitude was allowed. All notifications in Victoria in connexion with the department were sent out in general terms. This was necessary so that the child's medical attendant could make the diagnosis and treat the child.

Dr. Greig showed a table setting out the details of the examinations carried out by her department during the year 1931-1932. The total number of pupils examined was 48,459. Defective vision was found in 6·2% of pupils and 3·3% wore glasses. Hearing was defective in 1·5%; 10·9% had defects of the nose and throat and 19·2% were submitted to operations on the nose and throat. Dental defects were present in 31·3%; 27·1% had fillings and 0·8% wore dental plates. Defects of the hair were present in 3·7%, and of the heart in 0·3%. Anæmia was present in 3·5%; all those affected were girls.

Eight full time dental surgeons were working in the department. During the year 1931-1932 38,109 children

were treated and 40,893 visits were paid. In the first dentition 72,424 extractions were made and 6,546 fillings were inserted. In the second dentition 11,791 extractions were made and 32,247 fillings were inserted. A general anæsthetic was used 2,990 times and regulating plates numbered 1,839.

Dr. Greig considered some of the defects in detail. She said that the greatest improvement had occurred in regard to hearing defects. The percentage of affected children had fallen from over 3% to a little over 1%; with this fall otorrhœa had become less frequent. Dr. Greig made it a practice to find out the name and address of every child with defective hearing so that a nurse might visit the child's home and that the condition of no child might become chronic.

One of the greatest difficulties experienced in the department was the child who was undersized and undernourished and often notified as "unsatisfactory general health" or "unsatisfactory growth". They found that medical practitioners took very little interest in these children as no gross defect was found, but there was as a rule anorexia and perhaps some indigestion.

In concluding her paper Dr. Greig pointed out that the Australian child was remarkably free from serious defects found in children in other parts of the world. This freedom from serious defects, combined with the fact that Australian children averaged more in height and weight than the average English child, gave Australia a chance of producing a stalwart race if only she would remedy the minor defects still existing. The aim should be to produce a healthy people with a constant efficiency and endurance, a people that would use its special abilities to the utmost.

DR. R. SOUTHBY (Melbourne) thanked Dr. Greig for her lucid and informative paper. He was inclined to regard asthma as being due in great measure to dietetic factors in childhood. Pertussis was undoubtedly a serious infection in young children, and vaccine, given early and in large doses, was, in his opinion, undoubtedly helpful. He thought it was useful, too, as a prophylactic.

In regard to acute meningitis he referred to the observation he had made from *post mortem* examinations some years ago that the great majority of children with acute meningitis were free from ear infections.

Dr. Southby said he would like to know if there were any statistics showing that respiratory infections were less in children who had their tonsils and adenoids removed early. Some held the view that these children were more susceptible to infection of the respiratory tract. He would like to ask Dr. Greig also what anæsthetic was used by the dental surgeons for these children.

In regard to enuresis he thought that the condition was at times allergic in nature. He frequently got good results in this condition by giving large doses of calcium. Dr. Southby thought that the association between worms and appendicitis was very definite. Finally he thought that the meeting should move a recommendation to the British Medical Association advocating prophylaxis against diphtheria and whooping cough.

DR. EDGAR STEPHEN (Sydney) said he did not associate attacks of croup in any way with subsequent asthma. In regard to the use of vaccine in whooping cough, he thought it was sometimes useful in the early stages of the disease, but he did not consider it to be of value in prophylaxis.

DR. J. W. BEAN (Brisbane) asked Professor Harvey Sutton's opinion concerning mineral salts and unboiled milk in the dieting of these children; could the former be disregarded, provided the vitamin content of the food was satisfactory? Some people attached a lot of importance to these salts. He would also like to ask Dr. Dale if it was always certain that the bacilli were killed in all these vaccines?

Dr. Bean referred to Dr. Greig's remark concerning the apparently anæmic appearance of many of these children. A condition of angio-hypotonia had been described which was often associated with slow forms of focal sepsis. It was sometimes found on rubbing the lips of the children or making them lie down, that their colour was good.

DR. J. DALE (Melbourne), in reply to Dr. Bean, said that diphtheria prophylactic material is always free from toxin. All these preparations should be treated by heat. There was no difficulty in killing the organisms in vaccines with heat and antiseptics.

DR. JEFFERIS TURNER (Brisbane) referred to the question of thread worms. They might cause serious symptoms, but he had never seen them. Prophylaxis was the simplest thing in the world in regard to the treatment of this condition. The worms had to leave the bowel to lay eggs. This frequently took place near the anus and during the night. The child rubbed the part and crushed the eggs and reinfected itself through the mouth. Prophylaxis consisted in putting the child into combinations at night time and smearing some mercurial ointment around the anus.

DR. S. F. MCDONALD (Brisbane) said he was surprised to hear Dr. Greig's remarks concerning cripples in Victoria. Investigations in Queensland had revealed 120 children under fourteen who were cripples. What these children needed mostly was a school.

He referred to the enormous effect of insufficient food on the health of children during the recent years of depression. In Queensland rickets was usually a rare disease; during the last year or two there had been a comparatively large number of cases. He referred also to the type of child who had anorexia through too much care and attention.

Dr. Greig, in reply to Dr. Southby, said that ethyl chloride or one of its modifications was the anæsthetic used in the dental centres in Melbourne. She wished to thank Dr. Jefferis Turner for his suggestions in regard to the treatment of worms.

In reply to Dr. McDonald, she said that investigations had been carried out by school medical officers and attendance officers in regard to the reason for absence of children from school, and she could only repeat that cripples were definitely scarce in Victoria, and that infantile paralysis was predominantly the source; there were very few of any other forms.

Dr. Harvey Sutton, in reply to Dr. Bean, said that it was realized that lack of milk consumption was a vital thing in the health of the pre-school child and that mineral salts played an important part.

In reply to Dr. Southby, Professor Sutton said that the question of asthma was a very interesting one. He referred to Dr. Bray's article in *The British Medical Journal* concerning the effect which different material in pillows might have on the incidence of attacks. He thought also that the dietetic factor was an important one.

He was of opinion that a really good trial should be given to the use of prophylactic vaccine in pertussis during an epidemic. The long incubation period of pertussis was, of course, a stumbling block.

In regard to crippled children the Sydney census had revealed 1,200, at least half of whom were under eighteen years of age. Forty-five *per centum* of the cases were due to infantile paralysis, the remainder were in roughly equal proportions and consisted of congenital deformities, accidents at birth, osteomyelitis, traumatism and tuberculosis. He was of opinion that there was room for at least four cripple schools in Sydney if the subject were attacked properly.

SECTION OF PÆDIATRICS AND SECTION OF PATHOLOGY, BACTERIOLOGY AND CANCER RESEARCH.

Poliomyelitis.

A MEETING of the Section of Pædiatrics and of the Section of Pathology, Bacteriology and Cancer Research was held to discuss poliomyelitis. DR. S. F. MCDONALD occupied the chair.

DR. J. BEAN (Brisbane) read a paper on school factors in epidemic anterior poliomyelitis. He based his remarks on the results of an investigation of 135 cases of the disease occurring during the 1931-1932 epidemic in the Greater Brisbane area. He admitted that the investigation was based on "hearsay" rather than a first hand clinical research, but he thought that some useful material had been collected. He advanced his views as "surmises" rather than as established conclusions.

Dr. Bean said that in the epidemic new cases were in an altogether remarkable number of instances associated with "old" cases. In 35 instances there was an intimate nexus of new with old cases; in 17 instances the nexus was fairly close. Dr. Bean said that it was impossible not to be impressed by the data collected. At the same time, if one based on it a conclusion that many old poliomyelitic patients were "sleeping volcanoes", in other words that they became intermittently eruptive so far as transferring active virus to others was concerned, one was faced with an at present unexplainable inconsistency. Investigations of poliomyelitis epidemics seemed to show a creeping tendency in the spread. Dr. Bean showed a map of the affected area in which the centrifugal spread of infection during the epidemic was shown.

In reference to the "sleeping volcano" theory, Dr. Bean said that in diphtheria after an attack the original high titre of the blood as to circulating antibodies soon fell to but a small fraction of its former figure. On the other hand, Burnet and Macnamara in their investigations of poliomyelitis virus stated that "recently convalescent" serum and serum of persons affected three years previously showed no significant difference between their respective virucidal properties. Contrasting such tenacity of titre with the so rapidly dwindling titre of the diphtheritic, Dr. Bean wondered whether it could mean that in the case of poliomyelitis donors a "smouldering" virus was all the while sufficiently provocative as antigen to maintain the antibodies of the blood as regards poliomyelitis at a high titre. He asked, supposing it to be the case that persons with outstandingly high titre could be proved to be carriers of virulent poliomyelitis virus, could such fact be utilized as a test for discovering such virulent carriers.

Schools were the main nurseries of the epidemic. They were ideal for fostering high virulence through a favourable passage. At the first hint of epidemicity every effort should be made to locate the centre of origin. Schools should then be closed. Concourses of children should also be prevented.

DR. J. MACNAMARA (Melbourne) read a paper on poliomyelitis. She said that, though twenty years had elapsed since Flexner and Lewis showed that the infective agent of human poliomyelitis belonged to the group of filter-passing viruses, there were many questions to which an honest proven answer could not be given. Dr. Macnamara set out ten such questions. She went on to say that a theory had been evolved to answer some of the questions. The virus had been isolated from the naso-pharynx of a few contacts and from a few persons suffering during times of epidemic from minor illnesses. It had been shown that monkeys might be infected by intranasal instillation of infective material. Therefore it had been inferred that the virus entered and left its human host by way of the naso-pharynx and that the majority of persons dealt effectively with the virus without developing recognizable symptoms. This theory had received support from the work of Aycock, but Aycock's work had to be reviewed in the light of newer knowledge. The virus used for Aycock's work was one highly adapted to monkey nervous tissue after repeated passages through monkeys. It had been shown within the last four years in Melbourne, New York and New Haven that strains of virus near the human source had quantitative and qualitative differences from strains adapted to monkeys. In many centres in the United States the naso-pharyngeal mode of entry was regarded as the most probable, but in Europe Kling and his fellow workers suspected that the entrance of the virus was by way of the gastro-intestinal tract and they were looking for evidence to incriminate water as a vehicle. Against the theory of naso-pharyngeal spread was the fact that the seasonal incidence of poliomyelitis was not that of diseases spread by naso-pharyngeal discharges, such as cerebro-spinal meningitis, but rather the season of insect activity and of gastro-intestinal infections. The incidence of poliomyelitis did not increase with overcrowding, but rather did cases occur during the season and in the places when people were out of doors.

Dr. Macnamara referred to the difficulty of finding a cheap experimental animal for research on poliomyelitis. She pointed out, however, that there was a disease in animals which in its natural host resembled, clinically and pathologically, poliomyelitis as it occurred in man. This disease was louping ill, a virus disease of sheep and pigs in Scotland and the north of England. Dr. Macnamara showed that in the history of the knowledge of louping ill there was a parallel to poliomyelitis in man. She gave some details of this parallelism; and said that the work done on louping ill showed how misleading might be the inferences drawn from laboratory rather than from field experiments. White mice and even sheep might be infected by intranasal instillation of the virus of louping ill, just as monkeys might be infected by intra-nasal instillation of the virus of poliomyelitis; yet the portal of entry of the virus in sheep in the fields of Scotland was not the naso-pharynx. Was it therefore justifiable to hold that the naso-pharynx was the portal of entry in human poliomyelitis? It was also instructive to note that louping ill, regarded by laboratory workers as being due to a neurotropic virus, was under natural conditions far more often a manifestation of the viscerotropic element of that virus.

Dr. Macnamara held that the hypothesis that the spread of the virus in man was similar to that found in monkeys should be received with caution. The view that each virus had affinity for one particular type of cell had had to be modified; it had been shown that viruses were adaptable to tissues other than those affected in the natural disease. Years ago Wickham had shown that definite conclusions could be drawn from experimental work only when the animal that was the subject of the experiment reacted to the disease in the same way that man did. The monkey did not react to poliomyelitis as man did. Dr. Macnamara thought that it was wisest to hold the older conception of the disease—as the effect of a virus having viscerotropic and neurotropic elements, the former anticipating the latter and frequently being predominant.

Dr. Macnamara devoted most of the remainder of her paper to the question of treatment. In the course of her remarks on serum treatment she said that the care of the patient in the preparalytic stage of poliomyelitis demanded much more of the medical attendant than the injection of serum in the dosage written upon the container. It demanded experience with serum, careful estimation of the dosage and vigilant observation of the response of the patient. She said that it had been instructive to her in her work overseas to note that where this attitude was adopted, there was no question of the value of human immune serum; disappointment had followed attempts to standardize the dose. In her concluding remarks, Dr. Macnamara said that in countries like Australia, in which invalid pensions were provided, care of the potential cripples left by poliomyelitis with rehabilitation of actual cripples would result in economic saving to the community, as well as in increased happiness and usefulness of the persons affected.

DR. JEFFERIS TURNER (Brisbane) congratulated Dr. Macnamara on the charming clearness of her address. He felt that they must still believe that there were carriers of poliomyelitis free of disease, numerous in epidemics, and many people who showed few clinical signs even after infection. The question that he felt must be asked was why the few patients who exhibited disease fell down to it. Hereditary susceptibility was an hypothesis supported by the records of familial infection. Massive infection was another theory and the overcrowding in schools making this possible might be a good reason for closing them. Fatigue might be a predisposing factor.

He asked Dr. Bean had he seen any possible predisposing causes in deficient dietary or home conditions.

Dr. Bean, in reply, said that a complete analysis had been made of only fifty cases as yet, but his impression was that fatigue, for example a long train journey or excessive sea bathing and sun exposure in a weakly child, might be a predisposing factor. There were also many children whose parents were obtaining food relief, and who had little green vegetables in their diet and often less than half a pint of milk daily. Fright also was recorded in some histories as having preceded the onset of poliomyelitis.

DR. E. H. M. STEPHEN (Sydney) said that he was a warm advocate of the use of convalescent serum and he felt that adequate dosage was essential. He expressed admiration of Dr. Macnamara's paper in its general survey and its attention to detail, and asked her could she lay down any principles of guidance in actual dosage of serum.

Dr. Macnamara, in reply, said that the one essential in serum dosage was that enough should be given to bring the temperature down. Actual amounts could not be specified because the product was not standardized and each batch varied in potency. For example, the space of time between the donor's infection and the withdrawal of the blood, the variation in severity of infection in donors of the same time period of withdrawal might produce sera widely different in titre. Further, the strains of virus varied from year to year. As an example she said that on comparison the strains of meningococci used for immunizing horses to produce anti-meningococcal serum of standard titre were found in one New York epidemic to be entirely different serologically from the organisms causing the epidemic and the antiserum produced was ineffective in treatment. Conditions in a poliomyelitis epidemic might be exactly comparable. She said that 70 cubic centimetres was a fair guess at an initial dose and one should be at hand to watch the effect on the temperature. Each case must be treated as an individual emergency. To avoid the production of an irrelevant reaction which might obscure the effect of the serum, antiseptics were not employed in its preparation.

DR. J. M. TWHIGG (New Zealand) said that the New Zealand workers were entirely satisfied that serum was an effective treatment. He instanced the case of one donor from whom a pint of blood was withdrawn at weekly intervals six times and at the end of this period was yielding potent serum. He asked Dr. Macnamara if louping ill occurred naturally in Australia.

Dr. Macnamara, in reply, said that the paralytic diseases of pigs and sheep in this country had not yet been fully investigated.

DR. O. LATHAM (Sydney) said that he had had opportunity of seeing the work done in the School of Public Health and Tropical Medicine and was interested in the fact that serum obtained from patients who had no paralysis was effective in neutralizing monkey virus. In one case in which the animal died after the use of this serum its spinal cord showed no histological evidence of active infection. In experimental infection where cerebral inoculation was practised, the brunt of the infection fell upon the axone and nerve cell in the spinal cord. Dr. Latham had had opportunity of seeing the first case of X disease in Broken Hill. It was of the nature of an epidemic meningo-encephalitis which affected the brain floridly in contrast to poliomyelitis, the effects of which were largely on the spinal cord.

DR. R. SOUTHBY (Melbourne) said that he was interested in the association of old and new cases noted by Dr. Bean and the advisability of isolating the new cases in a hospital. He asked why cross-infection within the hospital was almost unknown. Also what would account for the one short burst of the disease in Brisbane and its complete subsidence when in the southern State the epidemic had flamed slowly for some years, showing an increase of virulence. He asked in regard to the so-called "monkey educated" strains whether there might not be a parallel increase of virulence in the experimental animal. He was interested in the association of cases in three generations of the one family. He had seen a similar association in syphilis and in some forms of muscular dystrophy. The variation in yellow fever virus exhibiting the viscerotropic syndrome in man and monkey and neurotropic syndrome in mice provided an interesting parallel for the existence of a biphasic illness in poliomyelitis.

Dr. Southby also commented on the severity of the reaction to antipoliomyelitic horse serum given intrathecally in contrast to the absence of severe reaction after the use of antimeningococcal, antipneumococcal or antitetanic serum given by the same route.

DR. J. V. DUHIG (Brisbane) said that he did not believe in the potency of so-called normal serum. He considered potency in normal persons to be evidence of subclinical infection and a high titre in so-called normals must be extremely capricious. In his opinion a donor should have a definite residual paralysis to be suitable for use. He said that he considered that to wait for a high cell count before giving serum to a suspected preparalytic patient was criminal. Pleocytosis might not develop until the paralysis had occurred and the withholding of serum was inexcusable.

Dr. Duhig related a personal experience of a mild gastro-intestinal disturbance being followed three days later by herpes, this being an example of the variation from viscerotropic to neurotropic virus.

DR. S. F. MCDONALD (Brisbane) pointed out that sea and sun must not be incriminated as predisposing factors at seaside places which were so crowded; the children were frequently overtired and this was far more likely to be operative. He felt as regards the use of serum that when the next epidemic arose it would be needed not in litres but in buckets.

DR. DOUGLAS PARKER (New Norfolk) read a paper on the treatment of the commoner disabilities of the foot resulting from poliomyelitis. He said that the patients fell more or less into two groups: (i) those who had been under continuous care since the onset of the condition and who had ceased to recover further muscle power; (ii) those who had had no care and who often presented the grossest of deformities. Deformity made its appearance very insidiously, but progressed through definite stages: (i) the postural stage when gravity took charge due to loss of muscular power; (ii) the stage of the adaptive shortening of sound muscles and tendons and fascial with an elongation of the paralysed or weakened group; (iii) the occurrence of bony distortions. Treatment would depend on the stage at which the patient was seen. After enumerating the essential principles of tendon transplantation in the lower limb, Dr. Parker mentioned the common deformities.

In the early stages of claw-foot stretching *plus* a bar to the boot would suffice. When there was some contraction of the plantar fascia and muscles of the sole tenotomy was necessary *plus* a wrench and tenotomy of the extensors and flexors of the toes. In severe cases Dr. Parker preferred open to blind division. Sometimes a stabilization operation would be necessary.

In the treatment of *valgus* deformity operation was justified when only such a procedure would enable an iron to be discarded. Dr. Parker discussed the operation of transplantation and thought that the best results followed the use of the *peroneus brevis* and the long extensor of the toe. *Varus* was the exact reverse of *valgus*.

In the treatment of *calcaneus* Dr. Parker referred to four stages of treatment: (i) raising the heel and stiffening the tongue of the boot; (ii) transplantation, if active, of one of the peroneal tendons and a flexor into the *tendo Achillis*; (iii) osteotomy of the *os calcis*; the anterior bone block of Lambrudenei.

In reference to the *equinus* deformity, Dr. Parker enumerated some measures that had been tried for its relief. Among these he mentioned particularly the posterior bone block of Campbell. Campbell described his operation in conjunction with a stabilization of the foot, utilizing bone fragments which had been removed to effect

the bone block. Dr. Parker had seen good results obtained by lifting a graft from the tibia and driving it firmly into the *os calcis*. This was easier than Campbell's procedure and less likely to interfere with the movement of the ankle joint. When the *equinus* was of some standing they should be wary of attacking the condition, for the quadriceps muscle was weakened and it might be necessary for the patient to wear a caliper subsequently.

Dr. Parker then discussed the more common combined deformities. He described the operations of the late Robert Jones, of Naughton Dunn and of Hoke. Finally, he discussed the combination of stabilization with other operations. He concluded by saying that the aims of treatment should be kept in mind and the broad perspective should not be lost.

DR. A. V. MEEHAN (Brisbane) congratulated Dr. Parker on his excellent survey and summing up of this subject. He said that tendon transplantation and tenodeses were done in early stages, but transplantations were now abandoned. The considerations of the weight-bearing function of the foot must never be lost sight of. Arthrodeses were much more satisfactory. In transplanting powerful muscles there was a danger that one deformity might be converted into another. Tendon transplantation was the operation of choice in the upper limb. He was glad to hear Dr. Parker say that Whitman's operation had its place. He personally had done the operation for a period of sixteen years, and it was useful in cases of flail foot and bad calcaneus deformity. He thought it should not be performed after the age of twelve to fourteen years. Adults might get a painful arthritic condition as the result. Arthrodesis of the ankle joint was a difficult operation. The up-and-down movement must be maintained. If any lateral deformity should occur in the course of the arthrodesis, the patient was forced down on to the heads of the metatarsals and the condition was worse than if the patient had needed an artificial limb.

DR. JEAN MACNAMARA (Melbourne) thanked Dr. Parker for his careful survey of the subject, and remarked, in reference to his statement that the intrinsic muscles of the hand did not recover completely, that she had found that they responded well to rest and careful splinting, although this was tedious, and that they recovered better than the deltoids and almost as well as the thigh muscles. Children with incipient claw-foot treated by rest, plaster and careful splinting seemed to have achieved an almost normal foot. She thought that the use of tenodeses in a growing foot was dangerous in that a further operation might be necessary, since the transplanted tendon might not stretch.

Section I: Anaesthetics.

Anæsthesia.

DR. G. L. LILLIES, in his presidential address, discussed several aspects of anæsthesia.

He said that prenarcosis presented more difficulties and disappointments than any other part of their work. While he might be searching for the impossible, he had not yet given up hope of finding a drug which in a case of toxic goitre: (i) would allow a patient to reach the operating table in a drowsy condition, (ii) would not cause any respiratory or cardiac changes, (iii) would allow no period of excitability, (iv) would have a certain action. At present he was unaware of a drug which would fulfil these conditions.

Dr. Lillies discussed in turn: (*a*) morphine, morphine and atropine, morphine and hyoscine, (*b*) "Sodium amytal", (*c*) "Avertin", (*d*) paraldehyde, (*e*) chloretone, and showed how each of them fell short of the ideal.

In regard to preparation for anæsthesia, Dr. Lillies said that he thought few anæsthetists were aware of the elaborate preparation undergone by a patient before he reached the operating table. He referred to a case in which a man, aged seventy-two years, died on the operating table. On inquiry, Dr. Lillies learned that for one hour before the patient was taken to the operating theatre his lower bowel had been washed out by a zealous nurse. This was admittedly an extreme case, but he thought that in public hospital practice bowel preparation was far too drastic. Dr. Lillies was also insistent on the maintenance of silence during the induction period, and he thought that forcible restraint of a semi-conscious patient was the main cause of struggling.

The third aspect discussed was the need for the careful overhaul of apparatus. This should always be done by the anæsthetist himself. Dr. Lillies recorded instances in which the production of anæsthesia had been difficult because the apparatus was not working properly or was incorrectly filled.

Cyanosis during anæsthesia should never be noted. The surgeon was in the best position to observe the onset of cyanosis. Dr. Lillies had therefore made it a practice to inquire of the surgeon from time to time about the colour of the patient's blood. Cyanosis was one of the commonest causes of post-operative vomiting and it was also responsible for muscular rigidity. The main cause of cyanosis was obstruction of the airway. If no obstruction existed, oxygen should be administered from time to time. It should be realized, too, that even a temporary cyanosis resulted in excessive mucous secretion, the accumulation of which in its turn obstructed the airway and increased the cyanosis.

In regard to the inflammability of the anæsthetic agent, Dr. Lillies thought that ether was as dangerous as ethylene.

The position of the patient during anæsthesia was important. When ether was to be administered by the open method, the position most comfortable for the patient was the correct one for induction. It would usually be found that the patient preferred to have the head slightly raised. When gas anæsthetics were to be administered it was essential that the patient should be placed as nearly as possible in the position required by the surgeon. If the position required was too uncomfortable for the patient, pillows should be used to insure comfort; they should then be carefully removed, one at a time, when anæsthesia was well advanced until the required position was attained. With gas anæsthetics any considerable movement after anæsthetization lightened the anæsthesia and often entailed considerable difficulty and loss of time in the stabilization.

Vomiting might occur either during induction or during maintenance. During induction the usual cause was a too slow induction with intermittent administration of the anæsthetic agent. During the period of maintenance the main causes of vomiting were: (i) a reduction of the depth of anæsthesia, (ii) rough handling by the surgeon during light anæsthesia, (iii) antiperistalsis due to some obstructive lesion of the alimentary tract.

In regard to the maintenance of smooth anæsthesia, the secret lay in using the minimum quantity of the anæsthetic agent in such a way that the concentration was kept constant. In Dr. Lillies's opinion, the best type of anæsthesia was produced by the intratracheal ether machine, when a steady flow of even concentration of the anæsthetic agent was delivered to the patient.

When gas anæsthetics were being administered, care should be taken during the maintenance period to avoid delivering the gas with too great a pressure, for this could result in distension of the stomach, with consequent embarrassment to the surgeon; the effects might also be more serious if the patient had vomited.

In conclusion, Dr. Lillies referred to the stage of recovery. He insisted that the responsibilities of the anæsthetist did not end with the cessation of the administration of the anæsthetic agent. All patients should at this stage be made to breathe a mixture of 5% carbon dioxide in oxygen. This was advisable for the prevention of pulmonary collapse. It was essential that patients who had been for any considerable length of time in what might be described as awkward positions should be given the carbon dioxide and oxygen mixture for a few minutes each hour for some hours following the anæsthesia.

DR. G. BROWN (Adelaide) stated that he was unable to make up his mind as to which was the best of the basal narcotics. Most of those at present in use were uncertain in their action. It was quite common experience to find the patient was in a highly excited state during the recovery period and more nursing care was therefore necessary.

Dr. Brown described a case in which 0·6 gramme (ten grains) of chloretone was given. This patient slept for two days. He did not like paraldehyde as a basal narcotic in toxic goitre because of its tendency to cause tachycardia.

Dr. Brown agreed with Dr. Lillies that there was far too much drastic pre-operative treatment. He quoted an instance of a patient who was to have hysterectomy performed under paraldehyde narcosis. On going to examine this patient he was informed by the sister that the patient had already had oil and an enema and two bowel wash-outs. He did not agree with this, provided the bowels had acted normally for two or three days previously, perhaps with mild laxatives and an enema.

Dr. Brown also stressed the importance of a thorough inspection of all anæsthetic apparatus and said that this should be personally attended to by the anæsthetist and not left to nurses and theatre attendants. He instanced the over-filling of an ether tank in a machine with no trap; pure ether was blown over. This particular patient developed bronchopneumonia, but fortunately recovered.

With regard to the maintaining of an unobstructed airway and consequent cyanosis, he was pleased to hear of the rubber denture described by Dr. Lillies. He himself always liked to use an artificial airway with gas-oxygen anæsthesia, and preferred one of the Simpson type. He certainly intended to secure one of the rubber denture form.

Dr. Brown remarked that much could be done in securing adequate muscular relaxation, particularly in upper abdominal operations, by attending to the position of the patient. It was his custom to raise the head and shoulders of the patient slightly to secure relaxation of the recti muscles. By doing this it was often possible to improve muscular relaxation without increasing the depth of anæsthesia.

Dr. Brown had had a special trolley constructed to enable patients who had had spinal anæsthesia to be taken back to the ward with the whole body tilted so that the Trendelenburg position might be maintained.

Dr. Brown thought that much could be done in maintaining an even state of surgical anæsthesia with ether given by the open method by paying attention to the way in which the ether was poured on to the mask. The anæsthetist should adopt a "constant drip" method in preference to the method so frequently used; he should pour on a quantity of ether and cease only when all the vapour had evaporated, and should repeat this procedure throughout the operation.

DR. KAYE (Melbourne) drew attention to the difference between cyanosis (deficient saturation with oxygen of blood hæmoglobin) and anoxæmia (intake of oxygen insufficient to support life). In ether anæsthesia the two usually coexisted, but they did not necessarily do so in gas anæsthesia. In the latter, one should be guided less by the colour than by the true signs of anoxæmia, namely, increased respiratory rate, rising pulse rate and falling blood pressure. He did not imply that cyanosis was to be altogether ignored in the absence of signs of anoxæmia, as was customary in some American schools of anæsthesia. Most Australian anæsthetists preferred to err on the side of safety and to maintain a reasonably pink colour, even if it necessitated the addition of a little ether to the gas mixture so that a sufficiency of oxygen might be given to keep the colour pink.

He pointed out that, just as cyanosis could exist without anoxæmia, so anoxæmia could exist without cyanosis. This was well shown in certain cases of toxic goitre, which, owing to their high basal metabolic rate, required a large addition of oxygen to the gas mixture. They might thus present circulatory and respiratory signs of anoxæmia, even when their oxygen intake was sufficient to keep their hæmoglobin fully oxygenated. As a further illustration he demonstrated a "Nargraf" chart of a patient receiving nitrous oxide anæsthesia for cholecystectomy. Here, despite a high oxygen intake, early signs of jactitation appeared. Misled by the pink colour, he had interpreted them as signs of light anæsthesia, adding ether to the gas mixture. As a result, the jactitatory signs were increased and the blood pressure was severely depressed. Withdrawal of the ether and further addition of oxygen corrected the condition.

In reference to vomiting during anæsthesia, he showed the "Nargraf" record of a patient receiving nitrous oxide anæsthesia for operation for leaking ectopic gestation. Vomiting of solid undigested food occurred, with arrest of respiration and urgent signs of distress. He was doubtful as to whether an attempt should be made to intubate the larynx, at risk of pushing the food further down the trachea, or whether forced lung inflation with oxygen should be done so as to restore the cough reflex, but with risk of also forcing food into the trachea. Lung inflation was performed; the patient coughed and cleared her air passages, and subsequent anæsthesia was uneventful. The question was, which course—intubation or lung inflation—should be attempted should this situation be encountered again?

DR. W. I. T. HOTTEN (Sydney) stated that he had tried various basal narcotics and had had the best results with morphine, hyoscine and paraldehyde. He followed Rowbottom's technique.

For the past two years at the Royal Prince Alfred Hospital this form of premedication had been used in a large series of toxic goitre cases. The patients in this series, after a period of rest in bed and pre-operative preparation, received 5·4 milligrammes to 0·01 gramme (one-twelfth to one-sixth of a grain) of morphine two hours before the operation, followed by paraldehyde (three drachms for each four stone of body weight). In very strong athletic males 0·43 milligramme (one one-hundred-and-fiftieth of a grain) of hyoscine was given with morphine.

The patient's eyes should be lightly bandaged and the ears blocked, if possible. If possible, the subsequent administration of ether or gaseous anæsthetic was commenced in bed, as the disturbance naturally associated with the moving of the patient had a tendency to rouse him. By far the greater majority of such patients were in a drowsy condition and any undue respiratory depression had been noted.

With regard to "Avertin", Dr. Hotten said that he had practically ceased to use it. He described a case in which, fifteen minutes after the introduction of "Avertin" solution, the patient, although becoming gradually more drowsy, continued to sneeze in a most alarming fashion. This persisted until the inhalation anæsthetic (ether given by the open method) was administered.

Dr. Hotten agreed with Dr. Lillies and Dr. Brown that in many cases pre-anæsthetic preparation was overdone. He allowed patients to have water and glucose to drink up to within an hour or so of the operation.

Dr. Hotten emphasized the value of Dr. Lillies's remarks of personally overhauling and examining anæsthetic apparatus prior to inducing anæsthesia. By so doing, untoward incidents would be avoided and even tragedies averted. Most ether anæsthetic machines were now fitted with safety bottles.

Dr. Hotten drew attention to the value of keeping the patient a healthy pink colour. If there was a mechanical obstruction in the air passage cyanosis resulted, and

associated with this were salivation and muscular rigidity. Adequate oxygenation was of extreme importance in anæsthesia and implied a clear, unobstructed airway.

As regards the position of the patient, Dr. Hotten preferred the head and shoulders raised on a low pillow, with the head extended at the atlanto-occipital joint, in order to widen the angle between chin and sternal notch. This was the position in which an athlete held his head in running, and placed the respiratory passages in the best position for rapid and full inhalation.

Dr. Hotten thought that all operating theatres should be equipped with suction apparatus to enable the upper air passages to be cleared from mucus and vomitus. The anæsthetist should always be prepared to clear vomited matter from the region of the glottis if the occasion arose. This could be accomplished with the laryngoscope and a sucker.

In coaching the students he adopted a constant drip technique rather than interval douching, in order to maintain a constant level of anæsthesia.

Endotracheal Anæsthesia.

DR. H. J. DALY (Sydney) read a paper on endotracheal anæsthesia. After referring to the disadvantages of the method originally described by Meltzer and Auer, he said that three methods of endotracheal anæsthesia were practised at the present time. These were endotracheal insufflation, endotracheal inhalation, and Magill's low pressure technique. Dr. Daly referred to the need for preliminary examination of the patient, and he said that before endotracheal anæsthesia he always used some form of premedication. It was his custom to use morphine and atropine. He then described the essential parts of a good ether machine, such as the "Lidwill". He described the method of endotracheal insufflation practised by him. He said that in modern endotracheal insufflation the ether-laden air was forced into the lungs under positive pressure. The lungs were not kept distended by this pressure, but the patient's respiratory requirements were delivered directly into the trachea and his respiratory movements were supplemented, but not abolished. Dr. Daly described the various kinds of endotracheal tubes available, and pointed out that ordinary commercial rubber tubing made the best form of endotracheal tube. In connexion with maintenance of anæsthesia, he said that with this method the desired depth of anæsthesia could be gauged and maintained with greater accuracy and comfort than when any other form of general anæsthesia was employed. The respiration was quiet and even, and the breathing purely diaphragmatic. Dr. Daly thought that the hard respiratory muscular work sometimes done by patients under general anæsthesia often left them exhausted and accounted for much of the post-operative morbidity.

Turning to endotracheal inhalation, Dr. Daly said that this meant to-and-fro breathing of ether vapour through wide bore tubes passed into the trachea. No pressure was used with this method. The wide bore tube was virtually an extension of the trachea and acted as such. Dr. Daly described the method in some detail and said that elaborate apparatus was not needed for this type of anæsthesia. There was one serious disadvantage, and that was that there was available no source of positive pressure should one be needed for purposes of resuscitation.

In conclusion, Dr. Daly described Magill's low pressure technique. Magill used "Nembutal" for premedication. A combination of gas, oxygen and ether was used for induction purposes and intubation might be carried out through the mouth or nose. Dr. Daly said that he had used Magill's method and he thought that the colour of the patient, the quiet breathing and the muscular relaxation produced more closely resembled deep natural sleep than any other form of anæsthesia with which he was acquainted.

DR. ATHOL BLAUBAUM (Melbourne) read a paper on endotracheal anæsthesia. Before its introduction he had used local anæsthesia in preference to general anæsthesia. But endotracheal anæsthesia had three great advantages over local anæsthesia. In the first place, ischæmia of the operative field, with resulting tendency to sloughing and delayed healing, was avoided. Secondly, psychical trauma in the highly nervous patient was less likely to occur. And thirdly, the surgeon worked under less stress. Dr. Blaubaum had performed some thousands of operations using endotracheal anæsthesia and had found it most satisfactory. In regard to technique, he said that in order to intubate the larynx successfully using the laryngoscope, it was necessary that a perfect view of the introitus should be obtained; this necessitated perfect relaxation. The head should be placed in the position which enabled the best view to be obtained; Dr. Blaubaum preferred the Jackson position. It was important, too, to see that no pressure was exerted on the upper teeth or gums. A gag was unnecessary. The laryngoscope was introduced with the left hand until the epiglottis was well engaged; it was then lifted up firmly, practically suspending the patient's head. Dr. Blaubaum preferred the Killian laryngoscope with lateral slot (modified by Magill). He also referred to the advantage of using larger tubes, such as that of Magill, whereby anæsthesia could be maintained by inhalation. Nitrous oxide and ethylene, in cases unsuited to ether or chloroform, could be safely administered by this method. In sinus work, Dr. Blaubaum preferred to use ether. In endotracheal anæsthesia seepage of blood past the catheter occurred, but by careful technique the surgeon could manage to keep the blood out of the trachea. It was Dr. Blaubaum's opinion that since the introduction of endotracheal anæsthesia in laryngology post-operative respiratory sequelæ had diminished. He pointed out in conclusion that it was the duty of the surgeon to allow the anæsthetist unfettered choice of the most suitable anæsthetic for the individual patient.

DR. GILBERT TROUP (Perth) read a paper on endotracheal and low pressure anæsthesia. He discussed the reason for the abandonment by many anæsthetists of insufflation anæsthesia and quoted the reasons put forward by Waters:

> 1. The continuous flow of air, which was all too frequently cold and dry, through the trachea and lungs depleted the tissues of heat and moisture and by the excess removal of carbon dioxide greatly disturbed the acid balance of the patient.
>
> 2. There was the ever-present danger of subcutaneous emphysema of the face and neck when the outlet about the catheter might become obstructed by cord spasm or accumulated *débris*, with the pressure regulator perhaps out of action at the same moment.

Dr. Troup held that endotracheal and low pressure anæsthesia offered a distinct advance on insufflation technique. He said that the basis of the method was essentially the maintenance of a perfect airway—this, of course, had been one of the fundamental principles of the anæsthetist's art since its inception.

For inhalation endotracheal work one large bore tube was used; for low pressure anæsthesia this also held, but alternatively two smaller tubes might be utilized. If one tube only was used in the low pressure method, an expiratory valve had to be attached. With the inhalation endotracheal method one was limited practically to the use of ether or mixtures of ether and chloroform as the anæsthetic agent; with the low pressure technique the scope extended to gases. Dr. Troup went on to describe the technique adopted with both methods. He said that the scope of usage of the methods had widened to almost every branch of general anæsthesia. All the more recent advances in prenarcosis with the various barbiturates and so forth could be used as adjuvants. There was perfect control of the anæsthetic state of the patient, and emergencies could be promptly and efficiently dealt with should the necessity arise. A final advantage was that the technique was within the scope of anyone giving a moderate number of anæsthetics.

DR. GILBERT BROWN (Adelaide) congratulated the speakers on the excellence of the papers. He said that the advantages of different types of endotracheal anæsthesia were obvious to anyone who had used it. The difficulties met with during anæsthesia for operations on the upper

air passage, head and neck and lungs were obviated with the adoption of endotracheal anæsthesia. Since the advent of the gaseous anæsthetics they, too, might be used. Dr. Brown quoted figures of endotracheal anæsthesia administrations since 1924. Ether had been given 1,847 times, ethylene 222 times, nitrous oxide 116, and chloroform approximately 15 times—a total of 2,200. He had no liking for chloroform, however, even if it should be necessary, as, for example, when the cautery had to be used. He always induced anæsthesia with ether and then switched over to chloroform for ten to fifteen minutes prior to the use of diathermy. He then used a funnel covered with lint, which he attached to the end of the endotracheal catheter. However, in these days of gas endotracheal techniques it was unnecessary to use dangerous drugs when the same results could be obtained with innocuous anæsthetic agents. He was enthusiastic about Magill's tubes. One type of patient, namely, those suffering from acute phthisis, could now be anæsthetized with perfect safety under gas endotracheal anæsthesia. He had given large numbers of anæsthetics of this type to phthisical patients without evidence of any lighting up of the condition in the lungs. One patient had had two hæmorrhages six weeks prior to anæsthesia and showed no aggravation of the pulmonary condition following this type of anæsthetic.

DR. G. KAYE (Melbourne) agreed with what had been said about the value of endotracheal anæsthesia. He had six hundred cases recorded. If there were any contraindications, they were purely technical, for example, in œsophagoscopy the presence of a large tube seriously interfered with the surgeon's approach. Also in short, thick-necked persons or those with prominent upper incisor teeth difficulty with intubation would sometimes be experienced. In regard to technique, Dr. Kaye said that he used a Magill's tube, a rubber bag and spring exhalational valve connected to a simple endotracheal machine. He preferred the machine because it enabled one to control respiration apart from voluntary respiratory movements and to perform artificial respiration should it become necessary. He found intubation through the nose most unsatisfactory because of the size of the tubes. Tubes able to be passed through the nose were smaller than those passed through the mouth; the airway was smaller.

DR. A. BLAUBAUM (Melbourne) dealt with Dr. Kaye's difficulty in passing a large tube through the nose. He said that there were few noses that would take the large size tube. In regard to Dr. Troup's use of 20% cocaine as a spray for the nose and larynx, he thought it was rather dangerous. Cocaine was progressively more toxic as it passed down the throat into the œsophagus and stomach. Very small quantities of this 20% solution, finding their way into the stomach, might cause toxic symptoms. He thought a 5% solution was equally efficient. If Dr. Kaye used a 5% solution, shrinkage of the mucous membrane would enable him to use a larger tube in nasal intubation.

DR. G. L. LILLIES (Melbourne) thought that a 20% solution of cocaine was rather an alarming strength. Allen stated that even a 2% solution trickling down into the stomach might cause toxic symptoms. Dr. Daly had mentioned that endotracheal anæsthesia led to delightful relaxation in upper abdominal operations. But were they justified in introducing an endotracheal tube merely to secure ralaxation?

DR. GILBERT BROWN (Adelaide) said that he had used 10% cocaine solution as a naso-laryngeal spray in a case in which preliminary medication with "Avertin" had been given. The patient died. He thought that weaker solutions would probably not have such effects.

DR. W. I. T. HOTTEN (Sydney) said that in regard to the use of endotracheal anæsthesia in cases of toxic goitre, he thought that it was definitely contraindicated on the ground of the risk of subsequent tracheitis, bronchitis and pneumonia. At the Royal Prince Alfred Hospital, Sydney, endotracheal anæsthesia had been used for some years by certain surgeons in operations for toxic goitre with definite lessening of post-operative morbidity. The method now being adopted was premedication with morphine and paraldehyde followed by ether given by the open method or, more recently, by nitrous oxide and oxygen given with an ordinary face inhaler.

DR. G. L. LILLIES (Melbourne) spoke against the use of endotracheal anæsthesia in operations on toxic goitre. He had investigated a large series of toxic and obstructive goitres and found that with endotracheal anæsthesia 100% of patients had developed a post-anæsthetic pulmonary condition; but with ether given by the ordinary inhalation method and, more recently, with nitrous oxide-oxygen anæsthesia there was no definite morbidity among toxic goitre patients.

DR. G. TROUP (Western Australia) stated that in future he thought he would be content to use a much weaker solution of cocaine, probably 10%.

DR. H. DALY stated that it was his custom to use only a 10% solution of cocaine as a naso-laryngeal spray.

Premedication and Basal Narcosis.

DR. GILBERT BROWN (Adelaide) read a paper on premedication and basal narcosis, in which he reviewed 833 cases. He began by giving a short history of each of the following drugs: veronal, "Somnifene", "Avertin", "Pernocton", "Amytal", "Sodium amytal", "Nembutal", paraldehyde, "Luminal", "Evipan". He also referred to colonic oil-ether anæsthesia, to "Allonal", "Dial", "Phanodorm" and "Medinal".

In regard to the pharmacology of these drugs, Dr. Brown said that their effects were somewhat dependent on the amount given and on the rate and manner of administration. The circulation was somewhat depressed by all the drugs. The greatest fall of blood pressure was seen when the barbiturates were injected intravenously and in some cases of "Avertin" administration; it was most pronounced in patients suffering from hypertension and in those who were debilitated.

Turning to the results of basal narcosis, Dr. Brown said that from the point of view of the patient the result of basal narcosis was very pleasant. However, among his patients several cases of respiratory complication occurred. There were two cases of slight bronchitis, one case of hypostatic congestion of the lungs, and one of apneumatosis. In the two last mentioned cases the patients died. Although it was not possible to prove that these complications were due to the basal narcosis alone, the circumstances were highly suggestive. Since Rutherford Darling reported four cases of apneumatosis following basal narcosis with "Avertin", Dr. Brown had not used basal narcosis in any operation on the upper part of the abdomen. He reserved it for the very small number of patients who gave definite indications for its use. He found that better results were obtained by the use of smaller doses of the different drugs, as by this modification a state of fairly heavy sedation was produced, in which fear was abolished, but the patient could answer questions. He had abandoned the intravenous use of "Sodium amytal" and "Nembutal"; and he seldom used "Avertin", except for bronchoscopy and occasionally in brain surgery as a preliminary to local anæsthesia. In such cases the use of adrenaline was to be avoided owing to the risk of ventricular fibrillation.

Premedication was described by Dr. Brown as being employed in two forms, according to whether the patient was to be treated in hospital or was to return home after the operation. He gave details of the dosage of the several drugs he used in each form.

Dr. Brown described the complications and deaths that had occurred in 833 cases. He said that for these the drugs used for premedication or basal narcosis might have been in some measure responsible. Prolonged unconsciousness occurred in five patients; all recovered. In three instances relative overdose was the cause; in two others there was a possible idiosyncrasy. Restlessness occurred in a small number of patients during the recovery period. Excessive vomiting was present in seven instances; apart from these cases, the vomiting was definitely reduced in frequency and amount. Respiratory complications were the only ones that were serious. Five patients who received basal narcosis suffered from respiratory complications and two died. Of the five patients, three had some

respiratory affection at the time of operation or had suffered from such an infection shortly beforehand. Among the patients who received prenarcosis there were ten with respiratory complications and one died. Of the ten patients, seven had some respiratory affection at the time of operation or had suffered from such an affection shortly beforehand.

DR. E. COUPER BLACK (Adelaide) read a paper entitled: "Basal Narcosis with 'Avertin'." He based his remarks on 162 cases in which he had used "Avertin" and nine cases in which he had used paraldehyde; he also made reference to the barbiturates. He said that the dosage of "Avertin" depended on two main factors. The first was whether the aim was to obtain anæsthesia deep enough for certain minor procedures, such as bronchoscopy in children, or along with local anæsthesia, in which there was ordinarily little shock. The second was whether the aim was ordinary light premedication sufficient to abolish psychic trauma, nervousness, fear *et cetera* in ordinary major operations. In the first class the aim would be maximum safe and tried doses, and in the second only perfectly safe small doses. The age of the patient and his condition came into consideration in both these divisions; also the presence of known or suspected degenerative lesions of the liver and chronic or acute sepsis. In only perfectly healthy normal people did a dose of 0·1 cubic centimetre per kilogram of body weight give a good margin of safety. In cases of doubtful risk "Avertin" should be avoided or the surgeon should be content with a dose of 0·7 or 0·8 cubic centimetre per kilogram of body weight. Children stood larger doses than adults. This was probably because most children were perfectly healthy and had no degenerative processes in any of their organs. Two-thirds of the children treated by Dr. Black had received a dose of 0·12 or 0·13 cubic centimetre per kilogram of body weight.

Of Dr. Black's operations, 127 were performed on children and 35 on adults. Of the 35 adults, only five had "Avertin" alone. Of the children, 50% had "Avertin" alone and more than half of these were subjected to bronchoscopy; 12% of the children were successfully operated on with local anæsthesia, and 38% were given ether. Dr. Black discussed the types of operation carried out in both children and adults. He referred particularly to three cases of tetanus occurring in children. In these cases spasms were relieved, opisthotonus was practically abolished, breathing became quiet, yet the toxic poisoning of tetanus went on and all three children died. Dr. Black suggested that only the successful cases were reported in the literature.

Dr. Black found that the fall in blood pressure was greater than that usually quoted. The fall was twice as great in adults as in children. The fall was akin to that seen in ordinary sleep, but greater than this. It was the expression of the depression of circulatory and respiratory activities.

Dr. Black said that his experience of paraldehyde was limited to nine cases. In eight it was used for bronchoscopy and in one instance for an exophthalmic goitre. He wondered that it was not used more often.

In discussing his experience with the barbiturates, Dr. Black said that he was satisfied that "Nembutal" was an excellent basal narcotic for women and children, but that in healthy men it was erratic and incomplete in action. He disapproved of combinations of anæsthetic drugs; he said that an analogy had been suggested between the effect of mixed drinks and that of mixed drugs.

DR. L. C. E. LINDON (Adelaide) read a paper on premedication and basal narcosis from the viewpoint of the surgeon. He said that from the surgeon's point of view there were three essentials that should guide him in suggesting to the anæsthetist and to the patient any particular type of anæsthesia. They were: (i) The contemplation of the anæsthetic and its induction should give the minimum of anxiety and discomfort to the patient. (ii) The depth of anæsthesia should facilitate to the highest degree the access to the organ to be dealt with and the performance of the subsequent surgical procedure. (iii) The after-effects of the premedication and of the anæsthetic must be considered and that type of anæsthesia chosen which would least of all militate against a rapid return of the patient's general physiological processes to normal.

Dr. Lindon discussed the last two of these essentials in detail. He concluded that in general surgery cases fell naturally into two groups. The first group included probably the large majority of patients. It consisted of those who were not suffering from an urgent or toxic condition and whose organs of secretion and excretion appeared to be reasonably healthy. For these patients ether was still the anæsthetic of choice and in anæsthetizing them one was at liberty, with safety and comfortable oblivion for the patient, to employ almost any form of premedication. The second group comprised a smaller number of patients, who might be classified into five groups. These groups were as follows: (i) Patients with evidence of diminished renal function, whether the proposed operation was to be performed upon the renal tract or elsewhere. (ii) Patients with evidence of advanced hepatic failure. (iii) Patients suffering from toxic goitre. (iv) Patients suffering from pulmonary tuberculosis who required operation. (v) Patients who were to be subjected to intracranial operations. Dr. Lindon pointed out that in these groups toxicity or deficiency of the organs of excretion rendered it inadvisable to use any drug which would add a burden to these organs or which would prolong the period of post-operative unconsciousness. For patients in these groups, gas or ethylene, preceded by a liberal dose of hyoscine, gave the damaged organs the greatest chance of recovery.

In regard to "Avertin", Dr. Lindon concluded that it was too uncertain in its limit of safety for general use, even in small doses for premedication, except in children. Paraldehyde was generally safe either for premedication or as a basal narcotic, but it was not always certain in its results. It should not be used for patients with chronic bronchial or pulmonary disease. Dr. Lindon had come to the conclusion, though he felt very open to correction on the matter, that a greater tendency to post-operative pulmonary complications followed its use. These should be countered by the routine use of carbon dioxide and oxygen during the first forty-eight hours after operation.

Dr. Lindon summed up his remarks by stating that the more seriously the organs of secretion and excretion were involved, the less advisable was it to use any form of premedication or basal narcosis other than that produced by hyoscine or atropine, with or without a small dose of morphine.

DR. J. KEMPSON MADDOX (Sydney) read a paper in which he discussed the present position of "Avertin" anæsthesia. He said that the drug had been administered to over a million and a half of the world's population, to persons ranging in age from a few months to ninety-six years, and for practically every reason for which a narcotic was required.

Dr. Maddox reviewed the situation by countering some of the objections advanced against "Avertin". In regard to alleged danger and increased surgical risk, he said that there were three methods of assessing the danger of any drug. The first was experimental administration to laboratory animals; "Avertin" was highly satisfactory in this respect. The second was the experience of senior anæsthetists; such men had no complaint against "Avertin". The third was mortality statistics. Dr. Maddox said that statistics were notoriously unreliable. He showed that statistically "Avertin" must pass as a safe anæsthetic, and he quoted figures collected by Anschutz, showing ten deaths among 81,510 administrations.

Objections to the rectal route of administration were not valid, but there was partial truth in the objection that "Avertin" caused too much respiratory depression and fall of blood pressure, predisposing to pulmonary sequelæ. In this connexion Dr. Maddox discussed the use of "Coramine" and ephedrine.

Regarding the alleged toxic action of "Avertin" on the liver, reports were abundant of its successful use in the presence of jaundice, cholecystitis and hepatitis. The occasional excitement or restlessness during induction or recovery occurred with any narcotic and were less com-

monly seen than in barbiturate anæsthesia. The objection that the use of "Avertin" was too troublesome and time-consuming was the real reason for its lessened use. Dr. Maddox showed how this objection might be overcome.

DR. G. L. LILLIES (Melbourne) was disappointed in Dr. Lindon's statement that gas should be given only to sick people. Gas-oxygen anæsthesia was very valuable in all abdominal surgery.

The subject of operations on the stomach did extremely well after gas-oxygen or ethylene-oxygen anæsthesia. The freedom from vomiting was of great benefit. In some cases in which an ulcer was being excised high up toward the cardiac end of the stomach, there was some straining. Dr. Lillies felt quite certain that in patients the subject of chronic cholecystitis and cholelithiasis there was undoubtedly some liver damage, and in consequence it was only reasonable to suppose that some form of gaseous anæsthetic was preferable to either ether or chloroform.

In operations for the removal of the breast and gland some form of gas anæsthesia should always be used. He thought that operations on breasts and thyreoids were as successful with nitrous oxygen as with ethylene and oxygen.

DR. GOLLAN (Tasmania) said that he had listened with intense interest to the various papers. He spoke as a country practitioner and was sure that the city men did not understand the difficulties under which the country practitioner laboured. Of course, they stuck to old-fashioned methods, and it was his custom to employ the following method of premedication. Half an hour before operation he gave morphine (one-sixth of a grain) and hyoscine (one one-hundredth of a grain). This was followed by an induction with chloroform, which doubtless would not be to the liking of the Australian trained anæsthetist. Sometimes he used ethyl chloride instead of chloroform for induction; he then gave ether. He was particularly interested in basal anæsthesia, but, as far as he could see, it would appear that anæsthetists were in a state of flux. He had been interested to hear of the use of paraldehyde as a basal narcotic. He frequently used it as a hypnotic, but found that the dosage as given in the pharmacopœia was inadequate.

DR. GEOFFREY KAYE (Melbourne) said that the question of the best form of anæsthesia in intracranial surgery was one with which anæsthetists were faced. Obviously the operation was a sufficient ordeal without an anæsthetic superimposed.

General anæsthesia should always be produced by the endotracheal method so that respiration could be controlled. Endotracheal gaseous anæsthesia was very satisfactory; surgeons complained of greater congestion and increased bleeding. On this account basal narcosis and local infarction anæsthesia had been used; the former was unreliable. The present tendency was to use "Nembutal" by mouth (one and a half to three grains) with morphine (one-eighth to one-sixth of a grain). Local infarction was then used. A whiff of some form of inhalation anæsthetic was used to dull the patient's senses during the turning of the osteoplastic flap or if the patient became a little restless or distressed during operation.

The disadvantages of ether were that it caused congestion of intracranial vessels. Another disadvantage was that diathermy could not be used.

DR. W. I. T. HOTTEN (Sydney) said that after listening to the views of Dr. Gilbert Brown, based on an extensive experience with basal narcotics, he was led to conclude that there was still doubt as to the safest and most satisfactory basal narcotic.

Dr. Hotten, after having used all the barbiturate group of basal narcotics, now pinned his faith to morphine, hyoscine, paraldehyde, following Rowbottom's technique. In his hands the technique produced uniformly good results.

In every case in which preliminary sedation was used, it was imperative that the patient should be kept quiet, in order to secure the maximum sedative action. He had frequently seen patients who had been given some form of prenarcosis entertaining relatives after administration. This, combined with rough handling of the patient in transit from bed to theatre, was the cause of many failures.

Adverting to the use of "Avertin" in cholecystectomy, Dr. Hotten said that he had had a case in which the patient had been wildly excited and violent in the immediate post-anæsthetic period. About seven days later he developed an extensive thrombosis in the veins of both legs. Dr. Hotten asked others present if there was any possibility of "Avertin" having played any part in producing this condition.

Dr. Hotten was in full accord with Dr. Lindon's remarks on the best type of premedication anæsthesia for Graves's disease.

Amongst some surgeons at the Royal Prince Alfred Hospital toxic goitre had for about two years been dealt with along these lines.

With reference to the use of basal narcosis in intracranial surgery, "Sodium amytal" had been given intravenously in several cases; it had been followed by infiltration local anæsthesia with "Novocain". The results were unsatisfactory. There was no certainty about the duration of unconsciousness.

Dr. Hotten quoted the case of a strong, healthy, young male who had been given a maximum dose of "Sodium amytal" by intravenous injection, and although he was quite unconscious on arrival in the theatre, after his scalp had been infiltrated along the line of the proposed incision he became extremely noisy and uncontrollable. This was undoubtedly due to the detoxicating effect of "Novocain" on "Sodium amytal".

Dr. Gilbert Brown, in reply, stated that he did not like "Avertin". He was always worried with the big fall in blood pressure. He quite agreed that larger doses could be given to children. He quoted an instance of a child of eighteen months of age who had received 0·125 cubic centimetre per kilogram of body weight. It was his experience that patients who had an idiosyncrasy for morphine were the most restless during recovery. He had found "Avertin" useful in the control of convulsions in cases of tetanus. For bronchoscopy in adults, "Avertin" was unsatisfactory unless cocaine was used in addition. He again remarked that he did not like paraldehyde for toxic goitre because it might produce a definite tachycardia. He did not notice a large drop in the blood pressure with paraldehyde. It was also the quick recovery and rapid excretion that made it more valuable in cases with impairment of renal function. In thoracoplasty he usually gave "split" doses of morphine and hyoscine. He gave morphine, 8·0 milligrammes (one-eighth of a grain), and hyoscine, 0·3 milligramme (one two-hundredth of a grain) at one and a half hours before operation and he repeated the same dose three-quarters of an hour before operation.

Ethylene was better than nitrous oxide in these cases because of the larger percentage of oxygen that could be given. Colonic ether caused pain and discomfort, and the patients objected to it. He always used atropine with chloroform. For gall-bladder operations 100% relaxation was not to be obtained wtih gas alone, but if gas anæsthesia was combined with a field block, relaxation was usually quite satisfactory. In brain operations, if a general anæsthetic was to be given, the anæsthesia should be of the endotracheal type, so that there might be control of the respiration. The expense of gas anæsthesia was to be considered in a long operation, such as brain operations. "Sodium amytal" and "Novocain" were unsatisfactory because they detoxicated one another, and the result was restlessness without either anæsthesia or amnesia.

Dr. Lindon, in reply, regretted that he had given the President a false impression as regards the relative harmful effects of ether and nitrous oxygen. Obviously, nitrous oxygen was far less damaging to any patient. But his statement that in the majority of operations ether was still the anæsthetic of choice was based on the fact that he was taking into consideration the fact that in country and general practice gas was often not available or was too expensive to warrant its use.

In reply to Dr. Kaye's question with reference to the problem of the ideal anæsthetic for cerebral surgery, Dr.

Lindon said that he was convinced from what he had seen in Professor Cushing's clinic, that the ideal anæsthetic was morphine premedication followed by "Novocain"-adrenaline infiltration. He admitted that he had frequently failed in this ideal and had often fallen back upon paraldehyde narcosis, but he considered that the failure was one of improper technique rather than one of an inadequate type of anæsthesia. He felt absolutely certain that any other form of anæsthesia would seldom be necessary if the neuro-surgeon trained himself to become more expert in the technique of craniotomy under local anæsthesia. And he intended still to adhere to Cushing's technique, which, when well carried out, avoided the many serious drawbacks attendant on any form of inhalation narcosis.

Dr. Black had referred to the alarming appearance of one child during the performance of encephalography under "Avertin", and Dr. Black had implied that this might have been due to the "Avertin". Dr. Lindon wished to point out that these transient but alarming symptoms were often associated with the entry of air into the third ventricle, and he did not think that the "Avertin" could in any way be held responsible for them.

Dr. Maddox, in reply, said that in regard to the use of "Avertin" in children, larger doses could be used when necessary in children, as the drug was eliminated more rapidly. He also remarked that in some cases an "Avertin" tolerance was established. He instanced the case of a child who had to have an operation on the mastoid. The operation was performed under "Avertin" and ether anæsthesia and the mastoid was subsequently dressed for several days under "Avertin" narcosis. After several days the "Avertin" had practically no effect.

The Teaching of Anæsthesia.

DR. GEOFFREY KAYE (Melbourne) read a paper in which he discussed the teaching of anæsthesia in Australia. He pointed out that the existing method was satisfactory neither to the teacher nor the taught. He described the method of teaching adopted in Melbourne and said that the student on qualification had some knowledge of the administration of ethyl chloride and ether by rule-of-thumb methods. He had, however, little acquaintance with the gaseous anæsthetics, with chloroform or with special methods, such as the endotracheal method. He was imperfectly equipped for the anæsthetic work that would fall to him as a junior resident medical officer; and, should he fail to secure a hospital appointment on his qualification, his position would be unfortunate in view of the large part played by anæsthesia in the early years of general practice.

There was some difference of opinion as to whether fuller training in anæsthesia, if given, should be given in the student years or in the year of junior hospital appointment. In favour of the latter course it was pointed out that the curriculum was already overloaded and that the resident medical officer would approach the subject with greater interest than the student would. On the other hand, the student years were years of reading and of mental receptivity; the proficient student would be of greater use after qualification; it was easier to assemble a class of students than of resident medical officers; and it would be necessary to include in a class the graduates who had failed to obtain a hospital appointment. Dr. Kaye thought that fuller training of students should be undertaken by the universities. The universities had to be made to recognize the desirability of fuller training. With this object in view he thought that the Section should make a recommendation to the Federal Council of the British Medical Association in Australia. The Council could then approach the several universities on the matter.

In order to illustrate what type of anæsthetic teaching was possible under appropriate conditions, Dr. Kaye referred to the scheme adopted at the McGill University, Montreal. In this scheme anæsthetic teaching was commenced in the fourth year by the department of pharmacology. Two lectures on the theory of anæsthesia were given and the student had to administer ether to dogs and to study the resulting reflex, circulatory and respiratory changes by graphic methods. In the fifth year two lectures were given on the choice of the anæsthetic and the care of the patient. One gas-oxygen apparatus was demonstrated in detail. The student had to give at least four anæsthetics (Dr. Kaye thought that this number was too small) and had to submit a detailed graphic report to his teacher. Finally, a clinic was arranged at which small operations were performed and the anæsthetists were allowed to hold the floor.

In suggesting a scheme of training in anæsthesia for Australia, Dr. Kaye said that he thought that it was unlikely that the Australian universities would adopt any such scheme as that of the McGill University. He outlined a scheme that was to be tried at the Alfred Hospital, Melbourne, during 1934. Anæsthetic instruction would be obligatory for medical students during their sixth year. A series of six lectures would be given covering the various aspects of the subject. In each lecture a sufficient theoretical background would be provided, apparatus would be shown and explained, and its use would be made clear by actual demonstration. After this each student would be required to administer at least ten anæsthetics under the supervision of an instructor. In this course no attempt would be made to treat the undergraduate as if he were a post-graduate student. The salient features only would be stressed and the student would be well grounded in fundamental principles; he would be master of the simpler technique.

In conclusion, Dr. Kaye spoke of the need for post-graduate training in anæsthetics. This was a matter that should be handled by the post-graduate committees in the several States. It was most desirable that a medical practitioner who wished to learn a new technique in anæsthesia should be able to do so.

DR. G. L. LILLIES (Melbourne) thanked Dr. Kaye for his clear statement of the present position in regard to the teaching of anæsthesia. He was in entire agreement that something should be done to improve teaching of students. He thought that the time allotted to the teaching of anæsthetics was insufficient to make the students efficient in anything. Students should have a solid fundamental knowledge of the administration of routine anæsthetics and post-graduate courses should be held at times for instruction in the more highly specialized forms of anæsthesia. He thought that something should be done to secure more recognition from the other specialties.

DR. GILBERT BROWN (Adelaide) thanked Dr. Kaye for the concise statement of the present teaching of anæsthesia. In Adelaide he (Dr. Gilbert Brown) had to train both medical and dental students. The medical students had five lectures, according to the syllabus. These were given in the sixth year. They had to give twenty anæsthetics at any time after the third year. They might be supervised in the giving of these anæsthetics by any one of fourteen anæsthetists. In consequence he, the lecturer in anæsthetics, had in some cases no idea of their skill. It was his custom to assign two students for each case. One attended to the anæsthetic and the other took blood pressure and pulse rate readings. There was no examination in anæsthetics for medical students.

The dental students attended the same lectures as the medical students and they had to give twenty-five anæsthetics. They had an examination in anæsthesia, one and a half hours being devoted to general anæsthesia and one and a half hours to local anæsthesia.

Dr. Gilbert Brown was in sympathy with the idea of post-graduate courses. At the last post-graduate course in Hobart he received a request from some of the members to give them instruction in premedication. This showed that increasing interest was being taken in anæsthesia by practitioners.

DR. W. I. T. HOTTEN (Sydney) also congratulated Dr. Kaye. With his customary zeal and enthusiasm he had gone into this important question and, as a result, he had apparently been confronted with the same difficulties in the teaching of anæsthetics as existed in Sydney. Dr. Hotten stated that he would not go into detail of the training in anæsthetics. As now given, for the most part

it was on the same lines as those in Sydney and Melbourne, except that it was necessary for the students to give only twelve major anæsthetics. Dr. Hotten stated that he had tried a scheme somewhat similar to that described by Dr. Kaye. He had taken each group of students twice a week and given a lecturette on various forms of anæsthesia, including premedication and management of complications, occurring during and after anæsthesia. This was followed by practical instruction. Dr. Hotten found that the more frequent use of the specialized forms of anæsthesia and the relegation of the more simple major surgical procedures resulted in a shortage of material to work on for teaching purposes. This shortage was accentuated by closing down of night classes owing to existing economical conditions. He did not think that it was in the best interests of the students to have to give anæsthetics for major surgical operations. This scheme consumed so much time that now Dr. Hotten had omitted the preliminary lecturette and tried to give some instruction to the remainder of the group whilst keeping an eye on the student anæsthetists. He was in entire agreement with the suggestions of several speakers that the teaching of the more highly specialized forms of anæsthesia should be left for post-graduate instruction.

DR. G. TROUP (Western Australia) thanked Dr. Kaye for his excellent paper. They in Western Australia had post-graduate courses annually, and he felt quite sure that the local committee would welcome suggestions for a course in post-graduate training in anæsthesia.

Dr. Kaye, in reply, said that he did not agree with Dr. Lillies that it was inadvisable to instruct students in special techniques and in gas anæsthesia. At the least they should be taught the fundamental principles of these techniques and should be given opportunity to see them applied. Only in this way would they be given an urge to acquire knowledge of the methods in their early post-graduate years. He congratulated Dr. Hotten on his almost single-handed attempt to systematize anæsthetic teaching in Sydney, but said that only by joint action could a really practicable system be established. For teaching purposes an abundant supply of "A" and "B" risk operative patients was essential. It was impossible to initiate students into anæsthesia with gaseous anæsthetics or chloroform where the patients presented anything but good operative risks. Here again it would be necessary to secure the cooperation of the surgeons, so that a sufficient number of suitable patients might be made available for anæsthetic teaching.

In reply to Dr. Brown, he said that the Adelaide system of teaching was better integrated than that in Melbourne. Whatever system was finally evolved in Melbourne, Dr. Kaye agreed that it would be materially helped by the Physiology Department of the University if the latter would arrange for students to gain experience in administering ether and chloroform to animals during their course in physiology. They would thus come into the hands of the instructors in anæsthesia already possessing a sound basis of physiological knowledge upon which to build. Finally, he suggested that the attention of students would be better directed towards anæsthesia if part of one question on the medicine examination paper were concerned with anæsthesia. As an example, a question upon the diagnosis and treatment of bronchiectasis might well end with the words: "State what you consider to be the best choice of anæsthetic for operation performed upon bronchiectatic subjects."

Accidents and Mistakes in Anæsthesia.

DR. N. W. WHITE (Melbourne) read a paper entitled: "Accidents and Mistakes in Anæsthesia." He related some incidents that had occurred in his own practice and discussed accidents and mistakes generally.

The first incident was related to the occurrence of the condition of athetosis in the anæsthetized patient. The second showed that the mucous membrane of the nostrils might under light anæsthesia act as a "reflexiginous area". Another incident in which a disaster nearly occurred showed that the anæsthetist and no one else was responsible for seeing that the apparatus he proposed to use was in a safe and proper condition. In yet another instance acute pulmonary œdema occurred during an operation in a case of thyreotoxicosis.

Discussing difficulties in anæsthesia, Dr. White said that they arose from the patient, the anæsthetist or from the anæsthetic agent or apparatus. The patient caused trouble either by the nature or severity of his complaint or by manifesting unusual reactions either to the drugs used for premedication or to the anæsthetic agent. As far as the anæsthetist was concerned, a little carelessness, a wrong estimation of risks, a poor choice of agent or method for a particular case, a failure to note signs of ill-omen were all to be laid at the door of every anæsthetist at some time or other. In regard to the third cause of difficulties, it was hard to separate the man from the machine. It was the duty of any man who proposed deliberately to accept responsibility for the safety and future health and comfort of a fellow man, to take all precautions in the way of testing of drugs and apparatus before use, not at the last moment, when the surgeon was waiting, but in detail and at leisure, so that no point, however small, might escape notice.

DR. GILBERT BROWN (Adelaide) stated that he had seen two patients die from acute pulmonary œdema. Death occurred in one instance one and a half hours after the anæsthetic was given, and in the other thirteen hours afterwards. Both patients had nitrous oxide-oxygen anæsthesia.

Section II: Medicine.

Raised Blood Pressure.

DR. C. B. BLACKBURN (Sydney) read, as his presidential address, a paper entitled: "Raised Blood Pressure." He said that there seemed to be a dangerous tendency for medical practitioners to allow figures of blood pressure readings to take the place of, instead of amplifying, observations by the unaided senses, so that blood pressure readings were becoming almost the sole basis of diagnosis, prognosis and treatment. Dr. Blackburn referred to certain physiological data concerning the circulation—the supply of oxygen to the tissues and the removal of waste products, the adjustability of the capillaries, the control of pressure in the arterioles by the cardiac output and by a neuro-chemical control of their elastic and muscular coats. From the clinical point of view the term blood pressure was accepted as meaning the pressure in certain large arteries. Dr. Blackburn also referred to the influence on the arterioles of the controlling centre in the medulla. Although in health the resting blood pressure of each person remained remarkably constant, considerable differences were encountered which depended on the fact that the joint control of the sympathetic and autonomic systems was often unbalanced. Dr. Blackburn then discussed the effect of exercise on the blood pressure of a healthy person, and he pointed out that an elevation of the blood pressure in which both systolic and diastolic readings were raised and suitably spaced was the optimum response to increased work, and that efficiency was apparently better attained by increasing the rate and force of the blood flowing through the arterioles than by merely augmenting the quantity. Clinically, a raised blood pressure from general vasoconstriction was chiefly seen under emotional stress, particularly that incident to a medical examination. This was a purely nervous phenomenon that was responsible

for many blood pressure phobias. In the reaction of the body to disease an adjustment in the direction of raising the blood pressure was frequently utilized. The reaction was sometimes so characteristic that the underlying cause could reasonably be surmised from a blood pressure reading. Thus, when there was a demand for a continuously increased cardiac output, as contrasted with the temporary call in exercise, peripheral dilatation resulted in an unusually low diastolic pressure, and such widely different conditions as aortic regurgitation and the thyreotoxic state might be suspected. The use of vasoconstriction in pathological conditions was seen most typically in the general rise in pressure from vasoconstriction that resulted when the blood supply to the vasomotor centre was curtailed as the result of increased intracranial tension. Anæmia of the centre also doubtless caused the reactionary rise in pressure that followed severe hæmorrhage. Dr. Blackburn also referred to the rise in pressure in coarctation of the aorta and in the early stages of hæmorrhagic nephritis. He added that clinical interest centred chiefly in the type of blood pressure met with in relation to structural changes in the arterial system.

Hyperpiesia had proved an attractive catchword and had been applied to hypertension and had led to the adoption of an unduly pessimistic attitude towards raised blood pressure generally. The stage had been reached of assigning to mere increase of the pressure of the blood on its containing walls the dignity of a serious disease; the gravity of this disease was calculated by the sphygmomanometer and the treatment was left to the peddler of hypotensive drugs. It was the measure of vascular disease that was of most account, and not the bursting strain of the vessel. Cerebral hæmorrhage was found *post mortem* to be but an occasional vascular accident interrupting the course of a vascular disease that normally tended to run on until failing pressure led to cerebral thrombosis, myocardial starvation or renal insufficiency. At what stage, then, in the fight against vascular constriction should they desist in their frantic efforts to lower the blood pressure? Dr. Blackburn asked whether it was not possible that at times their hypotensive drugs were but imposing on the circulation the added burden of having to counter their effect. The likelihood of hypertension being simply an indication of an internal adjustment seemed to be ignored.

In the complex condition of raised blood pressure the controlling mechanism accepted, as it were, the risk that one of the pipes might burst, and any interference in the way of treatment other than that aimed at removing the cause of the obstruction should purely be based on very sound knowledge that they were going to better the position. Dr. Blackburn concluded his paper by making a plea for greater attention to be paid to the psychic aspect.

Essential Hypertension.

DR. S. F. MCDONALD (Brisbane) read a paper entitled: "Essential Hypertension." He said that the first conception of arteriosclerosis was due to Gull and Sutton, who, in 1872, described an extensive arterio-capillary fibrosis that they likened to the fibrosis of old age. The modern view was due especially to Allbutt. Allbutt had differentiated hyperpiesia from the high blood pressure of renal disease, syphilis and similar arterial changes. At the outset they had to decide what was a raised and what was a normal blood pressure. It was sound medicine to regard with suspicion all cases in which the pressure exceeded the average by fifteen to twenty millimetres of mercury, especially between the ages of thirty-five and fifty. Excess of more than twenty millimetres was definitely significant. In accordance with modern views, a rough rule for estimating the normal pressure was: for the systolic pressure, 120 *plus* one-quarter the age up to sixty; for the diastolic pressure, 75 *plus* one-fifth of the age.

It was necessary to remember that the rise in pressure was primary, that elevation of the blood pressure could occur without any demonstrable change. Essential hypertension had been classified into mild benign, advanced benign, and malignant. They were all stages of the same condition. There were, however, cases of the malignant form, especially in young people, that developed suddenly. The original feature was the increase in the blood pressure. Later came the changes in the arteries. These advanced steadily until finally endarterial block might occur. It was a condition of arteriosclerosis. The damage was essentially one of starvation. Thus the manifestations of the disease might be classified according to the organs affected. In order of frequency they were cardiac, cerebral and renal. In the cardiac form there was a double burden. The heart had to carry on its normal or perhaps an increased amount of work, while at the same time it suffered from arterial narrowing and muscular starvation. The cerebral changes might be gradual or sudden. When frank injury to the cerebral vessels occurred, the mechanism was obvious. The cause of transient upsets was debatable. Some held that small hæmorrhages or thromboses occurred and others that spasm and œdema were responsible. Retinal changes might be considered with those of the central nervous system. They were of importance because they were obvious to the ophthalmoscope and from a prognostic point of view.

In the kidney in essential hypertension the disease fell primarily on the afferent arteries. The glomerular and efferent vessels were less affected and often not till the late stage of final proliferation. It was for this reason that so many men and women went through years of raised blood pressure with no sign of renal involvement. In the later stage the condition was inseparable from chronic nephritis.

In regard to prognosis, Dr. McDonald said that while the heart could maintain a satisfactory circulation against its growing handicap the patient might hope to carry on a normal life, if no sudden mental or physical call was made. He thought that the progress was more rapid in men than in women. In men the first symptom was often the first sign of the final stage, and no treatment seemed to make any difference. Dr. McDonald quoted figures gathered from the experience of life assurance companies showing the prognosis in different groups.

Dr. McDonald discussed the ætiology under the headings of age, sex, heredity, mental stress, dietetic factors and auto-intoxication. He said in conclusion that on the whole present day practitioners knew as little of the real cause or causes of hypertension as did Gull or Allbutt.

The Treatment of Hyperpiesia.

DR. D. R. W. COWAN (Adelaide) read a paper on the treatment of hyperpiesia. He said that it was important to realize that hyperpiesia was not necessarily a progressive lesion. The disease might be arrested or its rate of progress might be exceedingly slow; it was not inconsistent with good health and long life. The question of treatment should be approached with some degree of optimism. The patient should be closely questioned with regard to possible ætiological factors. The most important of these were heredity, faulty habits and mode of life, abnormal mental and physical stresses and infections. He should be examined to ascertain whether cardio-vascular or renal changes were already present. Foci of infection should be discovered and removed and intercurrent infections needed careful treatment to insure that convalescence was complete.

If symptoms were pronounced, it was a good plan to put the patient to bed for a few weeks, to give him mental and bodily rest. During this time the necessary investigations should be carried out. The patient should be informed concerning his condition, but a gloomy picture should not be painted. The psychological factor was of great importance both in the causation and treatment of hyperpiesia.

Although the disease might be due to some metabolic disorder, they had no information as to its nature. They should proceed on common sense lines and avoid dietary fads. The diet should be simple, plain and somewhat reduced in amount. Strict moderation in the use of the "pleasant poisons", alcohol, tobacco, tea and coffee, was advisable. Exercise in moderation was beneficial to those able to take it. Much depended on the patient and his

philosophy. Often he preferred to wear out rather than to rust out. To such a person rigid restrictions were irritating and probably harmful.

In regard to the use of drugs of the vasodilator type, Dr. Cowan said that their use was open to the objection that effects rather than causes were being treated. He discussed several of these drugs in turn and said that he thought that too vigorous attempts to reduce blood pressure were to be deprecated. Obviously thrombosis was more likely to occur in a slowly moving stream than in a rapidly moving one.

Presuming diagnosis to have been made at a reasonably early stage and a patient was willing to submit to restrictions that might at times be irksome, hyperpiesia might be wholly driven away. In later stages, when cardio-vascular changes were present, the progress of the condition might be controlled for good, or at worst, its extreme dangers might be postponed or possibly averted.

Electrocardiography and Raised Blood Pressure.

DR. M. D. SILBERBERG (Melbourne) read a paper in which he discussed the electrocardiographic changes in raised blood pressure. He said that the electrocardiogram recorded the passage of the excitation-contraction process through the muscle of the heart chambers; and he traced the path of the process from the sino-auricular node, through the auricles to the auriculo-ventricular node, and down the bundle of His and along its main branches to the left and right ventricles, to divide, after saddling the septum of the heart, into numerous subsidiary branches and terminate in the Purkinje network of the endocardium. Dr. Silberberg then showed how the various complexes of the normal electrocardiogram were produced; and he said that either focal or diffuse lesions of the myocardium or conduction system would interfere with the superimposed electrical effects and alter the form of the electrocardiogram. These lesions might be toxic, nutritional or more directly pathological. Lesions of the myocardium or conduction system, however produced, implied alteration of the local metabolism and therefore of the electrical phenomena recorded in the electrocardiogram.

The ætiological causes of raised blood pressure and of arteriosclerosis "hunted in couples" and in the majority of cases of hyperpiesis arteriosclerosis eventually occurred. Coronary sclerosis might form part of the general arterial disease or might occur *per se*. Raised blood pressure might also affect the form of the electrocardiograph through enlargement of the heart, in particular of the left ventricle. This produced an alteration of the electrical axis of the heart. In this way right- or left-sided ventricular preponderance was shown in graphs. Before a diagnosis of axis deviation due to ventricular enlargement was accepted it should be remembered that similar deviation might be produced by mechanical displacement of the heart, due to effusions, adhesions, neoplasms *et cetera*. It might also result from physiological factors, such as posture, effects of respiration and position of the diaphragm, and even from the shape of the chest. It was obvious, therefore, that no specific type of electrocardiogram could be expected in hyperpiesis. On the contrary, any type of arrhythmia or any change in the form of the curve might be expected.

Dr. Silberberg then proceeded to discuss several conditions around which interest centred from the prognostic point of view. First of all he referred to "*T*" inversions. There was a difficulty in that the exact mechanism of the production of the "*T*" wave was not fully understood. Lewis regarded it as a "wave of retreat" from apex to base. Most investigators agreed that it was associated with changes occurring in the ventricles during the phase of recovery from activity. East and Bain held that it was a composite wave due to the superimposed activities of the two ventricles. Pardee believed that three factors varied the height of the "*T*" wave: (i) the structural integrity of the myocardium, (ii) the state of nutrition of the myocardium, (iii) the strength of the ventricular contraction. To these Dr. Silberberg added the tilt or axis of the heart. There was sound evidence that toxic effects upon the heart muscle altered the "wave of retreat". Dr. Silberberg quoted figures of Willius dealing with mortality in hypertensive heart disease with "*T*" negativity, and compared them with figures published by Hepburn and Jamieson. He concluded that there was no very material difference in the mortality or in the average time of death between the coronary, hypertensive and miscellaneous groups of cases with significant "*T*" inversion. He quoted some figures from patients of his own. In 22 cases presenting various forms of "*T*" negativity the average period of survival was 32·9 months. Dr. Silberberg admitted that it was difficult to draw conclusions from so small a series, but he did not think that a larger series would materially alter the figures. Seen from any angle, significant "*T*" negativity carried a serious prognosis. As an evidence of serious disease it ranked with *pulsus alternans*, "gallop rhythm", renal and arteriosclerotic nephritis. Usually the clinical signs of cardiovascular disease were sufficiently ominous and the electrocardiogram had merely a confirmatory value.

Bundle branch lesions carried an unfavourable prognosis. According to published statistics, the average time from diagnosis to death was twelve months. In Dr. Silberberg's experience the time was longer than this; he had one patient who had survived ten years.

The occurrence of left-sided ventricular preponderance was not generally regarded as of prognostic importance.

After passing reference to low voltage curves, the "*Q*" wave (upon which there was no agreement as to prognostic significance) and to arrhythmia, Dr. Silberberg referred to electrocardiograms indicating progressive disease. He said that electrocardiography would indicate the probable development of serious cardiac lesions only when a series of records had been taken over a period of time. Periodic cardiographic examination was a counsel of perfection, as was its use as part of routine examination. Electrocardiography might be compared to radiography. Whilst it was not necessary in all cases, it had the merit of unmasking subtle changes which would otherwise escape recognition. Even if it failed to reveal an abnormality, it would at least be a source of satisfaction to the examiner.

Paralysis of Cranial Nerves in Malignant Hypertension.

DR. E. BRITTEN JONES (Adelaide) read a paper on the paralysis of cranial nerves occurring in malignant hypertension. He said that Cushing and Gordon Holmes had drawn attention to the fact that paralysis of certain ocular muscles might result from pressure of an atheromatous artery on the third, fourth or sixth nerves in their course between the brain stem and the orbit. After reading an article on the subject by Keith, Wagener and Kernohan in 1928, he had had under his care a girl of eight years of age suffering from malignant hypertension, who developed a facial paralysis of the lower motor neurone type, which lasted for about eight weeks and subsequently disappeared. The child died three months later from a cerebral catastrophe, but no *post mortem* examination had been made. Dr. Britten Jones had had two similar cases. He found it difficult to explain the paralysis in these circumstances. The only vessel that could be incriminated was the very small auditory artery that entered the internal auditory meatus; and he could not see how pressure from this small artery could be the cause of the symptoms. Griffith, however, in a recent article, had put forward three hypotheses: (i) Hæmorrhage in the pons involving the motor nucleus of the intrapontine portion of the motor root; (ii) involvement of the nerve between its origin from the pons and the internal auditory meatus by increased intracranial pressure or by local pressure by an artery; (iii) hæmorrhage within the facial canal. In one instance Griffith had found *post mortem* a hæmorrhage in the facial canal. Dr. Britten Jones asked whether any members had seen similar cases. He said that malignant hypertension had to be remembered as among the causes of facial paralysis.

Hypertension with Migraine and Hemiplegia.

PROFESSOR D. W. CARMALT JONES (Dunedin), in discussing the question of raised blood pressure, said that external hæmorrhage in a patient suffering from a raised blood pressure was not always recognized as such. He could recall instances of epistaxis, of retinal hæmorrhage, of hæmatemesis and of hæmoptysis. Hæmorrhage in raised blood pressure was a thing to be reckoned with; and the most important was that into the internal capsule, the "apoplectic stroke" of practice. This was held by many distinguished neurologists to be a disaster which patients did not survive. Professor Carmalt Jones quoted a case to show that this view was not correct, and said that Professor D'Ath had occasionally found evidence of healed cerebral hæmorrhage *post mortem*. Professor Carmalt Jones also referred to four patients who were all subjects of migraine and three of whom were certainly suffering from high blood pressure. All of them had transient attacks of hemiplegia with complete recovery. This was important, for if such cases could occur, the prognosis of hemiplegia with high blood pressure was not so grave as one was accustomed to consider it. None of the patients was suffering from internal capsular hæmorrhage, but such transient symptoms could hardly have been other than vascular in origin. The association with migraine in these patients was interesting. The cause of migraine was in dispute, but the choice seemed to be between vascular spasm and localized œdema. Although the absence of vasomotor control of the cerebral vessels was not now considered to be so complete as was formerly believed, a spasm of the necessary severity was an improbable occurrence. Some observers postulated as a cause of migraine a local swelling of tissues from imbibition of fluid. A similar condition situated in the internal capsule would produce hemiplegia, which might be expected to subside completely with absorption of the fluid.

DR. A. R. SOUTHWOOD (Adelaide) congratulated the Section on the splendid set of papers that had been read. The wide field that had been covered left little to discuss. He agreed as to the undesirability of fuss and scare in treating these patients and also as to the comparative valuelessness of an isolated observation.

A further point that had been not much stressed was the use of palpation as well as auscultation in taking blood pressure readings. There were occasionally cases where there was a silent period as well as the five phases usually recognized. According to Rolleston, this silent period might extend over twenty or thirty millimetres.

Another point was that the presence of thickened arteries did not detract from the value of blood pressure readings, as the thickening was not uniform. He assumed that the systolic pressure roughly represented the cardiac force, the diastolic pressure the peripheral load.

A comprehensive English record had been published by Conrad Tredgold, who had examined several thousand patients over a period of twenty years and who emphasized the fact that an age of between twenty and forty did not influence normal blood pressure. He also showed that height and weight had little importance unless very disproportionate. Emotion was of importance.

A more important thing was the difficulty in deciding whether a man of forty with headache and slight albuminuria and a systolic blood pressure round about 200 millimetres of mercury was suffering from essential hypertension or from chronic nephritis. Renal function tests were useful. In Adelaide he used Volhardt's water test, blood urea estimation, and Maclean's urea concentration test. It was interesting to speculate as to the importance of the constitutional cause. He must agree with Dr. Cowan that an ordinary regular existence was the best means of prolonging life.

DR. M. LIDWILL (Sydney) said that it was a great help to know that others were as ignorant as oneself. He agreed that extreme dietetic measures were useless and that dietetic treatment was useful only in moderation. Dr. Scot Skirving, Senior Medical Examiner of the Australian Mutual Provident Society, had assured him that Australian figures were ten millimetres of mercury higher than figures coming from other places. One point he would like to mention was that of cardiac enlargement. He saw many patients whose systolic blood pressure was about 160 or 170 millimetres of mercury. If such a patient had cardiac enlargement, he assumed that the blood pressure must have been raised for some time, and regarded this as an important prognostic point. When a patient with high blood pressure came into hospital with cardiac failure it was hard to decide whether the nephritis was secondary to the congestion or whether the primary nephritis was causing a failing heart. If one examined such a patient's urine after cooling and found urates, a primary nephritis was not present. A patient with long-standing nephritis could not pass urates. This observation was invaluable in deciding whether to give "Novasurol".

PROFESSOR W. A. OSBORNE (Melbourne) said he had very little of practical value to bring forward. Every drug that lowered the blood pressure by dilating the arterioles weakened the myocardium. This point might have some practical value. There was another point that had not been mentioned. In the maintenance of the blood pressure they had a beautifully self-adjusting mechanism. Possibly in each case there was a critical pressure which just escaped this mechanism and so fired the shot that was responsible for the hæmorrhage.

He asked whether the patients with facial nerve paralysis described by Dr. Britten Jones had loss of taste. He also asked what was the relation between alcohol and high blood pressure. Why did it often happen that the rake lived to a comfortable old age without undue increase in blood pressure, while the teetotaller died early of cerebral hæmorrhage? He suggested that the total abstainer lived not well, but far too wisely.

DR. S. V. SEWELL (Melbourne) stressed the value of eliminating nervousness when taking observations. He found that the patient was sometimes less nervous early in the examination than later. A small group of cases not hitherto referred to was comparable in some ways with acute Graves's disease. In these cases there was a very high blood pressure over a comparatively short period. Prognosis was good with complete rest. He had had as a patient a mine manager, a man who was in charge of three or four thousand men and who, after a very worrying six months with strikes and threatened strikes, had a fit and was observed to have a systolic blood pressure of over 300 millimetres of mercury. He had, however, not much cardiac enlargement and his vessels were not thickened. He had three more fits on the journey from Perth to Melbourne, and on arrival his blood pressure was over 325 millimetres. The fundi showed spasm, but no gross change. His own doctor's observations as to cardiac enlargement and the state of his vessels were confirmed. He was in an excitable nervous state and could not sleep. Formerly he had been an extremely equable person. He remained in Melbourne for six months and was given large doses of thyreoid extract, up to fifteen grains a day. His systolic blood pressure fell to 150 millimetres of mercury. He was accidentally killed two years later. In the meantime his blood pressure had been observed from time to time by his own doctor and had not been over 150 millimetres. Another patient of the same type had a peripheral facial paralysis. The systolic blood pressure estimated the day before was 280 millimetres of mercury. The facial paralysis lasted only forty-eight hours, and in ten days there was no trace of it. This patient had three other attacks, none of which lasted more than a week. Ultimately she had a complete facial paralysis, which had not cleared up. Five years later she came under observation again. She had lost weight, was thin and feeble, with a brownish appearance of the skin. On palpation there was a swelling in each loin. She died shortly afterwards and was found to have double hypernephroma. During this terminal illness her systolic blood pressure was never higher than 120 millimetres of mercury. This was an instance of a patient who cured herself by developing a

new disease. Both these cases occurred before 1914 and the diastolic pressures were therefore not recorded.

DR. R. P. MCMEEKIN (Melbourne) wished to point out the importance of heredity. He had observed two families in which cases of hypertension had occurred for three generations. It was interesting to notice the selectivity of the arteriosclerotic changes. In one family there had been one person with a cardiac condition and ten with cerebral hæmorrhage. As far as could be ascertained, the hæmorrhages had been in the same spot in each of the ten cases, which suggested that the inherent weakness of the vessel walls might be localized to one definite area.

DR. STUART GIBSON (Hobart) said that he had had a patient, a stout man of mature years, who went to bed perfectly well and woke up with a facial paralysis of the lower motor neurone type. His systolic blood pressure was 280 millimetres of mercury. This man's facial paralysis was still the same as it had been three and a half months before.

DR. E. A. TIVEY (Sydney) spoke of the variations in blood pressure during sleep. The blood pressure was materially lowered in quiet sleep, but was raised by startling dreams or other variations in the quality of the sleep. These variations might be critical and might explain hæmorrhage or thrombosis occurring during sleep.

DR. L. B. COX (Melbourne) had had a patient with right hemiplegia and hemianopia, who died. His brain was examined *post mortem* and the macroscopic appearances showed that he had had arteriosclerosis, but there was no evidence of hæmorrhage or softening. One could exclude spasm in these cases.

Dr. Blackburn, in reply to Professor Carmalt Jones, hoped he had not created the impression that hæmorrhages were not important. He had in fact said that the profession and the public were too disturbed by the anticipation of vascular rupture and that this was due in the long run to vascular disease, but not to hypertension. By the time the vessels were diseased the failing pressure would cause more trouble in the long run than the hypertension.

Dr. McDonald, in reply, asked Dr. Silberberg why so many cases of coronary thrombosis occurred during exertion. With regard to Professor Carmalt Jones's cases, he said that Fishberg recorded such cases, not associated with migraine, but if migraine were associated with spasm it was easy to see how sufferers from migraine were more liable to such a condition. On the other hand, œdema seemed a more probable explanation. He quite agreed with Dr. Southwood in regard to the importance of the tactile method of determining blood pressure, especially in children. The figures given were from both British and American sources.

The most useful tests in chronic nephritis were the urea concentration test, the determination of the blood urea content and, when biochemical apparatus was unobtainable, Mosenthal's test of the range and variation of specific gravity, the variation in amounts of urine passed, and the ratio of day and night urine was especially useful. The estimation of blood uric acid showed an early uric acid retention, which explained Dr. Lidwill's valuable hint on noting the presence or absence of urates.

Dr. McDonald was most grateful for Dr. Scot Skirving's figure of *plus* 10 millimetres extra in Australian subjects.

Professor Osborne's remark about alcohol was well timed. It was Dr. McDonald's impression that Dr. Raymond Pearl some years ago graded vascular risks as least in moderate drinkers, higher in teetotallers and heaviest in heavy drinkers.

Dr. Tivey's reference to increase of pressure during dreams was entirely in accordance with the modern view of the intense emotional activity which went on in dream states, activity quite sufficient to affect blood pressure.

Dr. Sewell's account of acute critical forms of hypertension, transitory and associated with thyreoid upset, was a most interesting and important addition to the discussion.

DR. M. D. SILBERBERG (Melbourne) said that Dr. McDonald had raised a difficult question and that patients developed coronary thrombosis not only after exertion, but after heavy meals or during sleep. He had been interested in Lewis's work, in which movements of the arm were studied while varying grades of pressure were produced in the vessels of the arm by means of an armlet. Pain sufficient to inhibit movement had been produced in this way. It had been postulated that certain substances in the tissue spaces were responsible for the pain and that these substances, when increased, might produce thrombosis. On the whole, cases of coronary thrombosis were more commonly not preceded by exertion.

Chronic Ulcerative Colitis.

DR. RAYMOND G. PENINGTON (Melbourne) read a paper entitled: "Chronic Ulcerative Colitis." He said that for practical purposes there were four types of the condition; these were: (i) the type due to *Entamœba histolytica*; (ii) that due to *Bacillus dysenteriæ*; (iii) that arising as a secondary infection of one of the preceding types by some other organism or organisms; (iv) types of uncertain ætiology, including those due to the diplococcus described by Bargen. The importance of the possibility of cases of chronic ulcerative colitis seen in Australia being due either to *Entamœba histolytica* or the bacillus of dysentery could not be over-emphasized. Further, amœbic dysentery might be acquired without residence in the tropics, and secondary infection would alter in some degree the patient's response to treatment. Regarding the group of uncertain ætiology there was much discussion. Bargen had isolated the diplococcus claimed by him to be the causative organism from over 80% of his cases. Both in England and Australia, however, the isolation of this organism had been extremely rare. Other observers had described other organisms. Dr. Penington thought that this group probably contained a variety of infecting organisms, one or more combinations of which might produce the disease, the type possibly varying under different climatic conditions or in different countries. Septic foci were an important ætiological factor.

The onset of the disease might be gradual or it might follow an acute attack of colitis, specific or otherwise, and it usually progressed with remissions and exacerbations for a period of months to years. The patient gave a story of frequent intractable rectal discharges of pus, mucus and blood, up to twenty daily, mixed with fæces of variable consistency. There was usually a history of colicky pain, straining and tenesmus. Associated with these symptoms there were general malaise and exhaustion, increased fatigue, loss of weight and an uncomfortable dull ache or dragging sensation in some part of the abdomen. Anæmia developed later.

Excluding some cases of amœbic infection, sigmoidoscopic examination revealed a red, granular, velvety mucosa which bled extremely easily. Ulcers appeared in the mucosa; these varied in depth. Some observers described miliary abscesses in the early stages of the disease, but others doubted their existence. Dr. Penington had never seen these ulcers in the type in which no specific organism had been isolated. In chronic long-standing cases a secondary condition of polypus formation sometimes developed. Dr. Penington summed up his description of the disease by saying that it might be described pathologically as an inflammatory disease of the colon, varying from the mildest inflammation of the mucosa to a profound phlegmonous infiltration leading to perforation, peritonitis and death.

The complications and sequelæ of the condition were numerous. They included polyposis, strictures of the colon and malignant changes in polypi. Perirectal abscess was not infrequent; hæmorrhage might be profuse, and perforation might give rise to general peritonitis. A large group of complications might be classed as due to embolic or toxic phenomena; these included arthritis, iritis, endocarditis, pyelitis and skin lesions.

Treatment of the condition would depend partly on the ætiology, was liable in all cases to be extremely tedious, but had to be continued until sigmoidoscopic examination revealed healed ulcers and a normal mucosa. In the presence of infection due to *Entamœba histolytica* emetine

should be given. In cases not due to the entamœba Hurst claimed excellent results from the intravenous administration of polyvalent antidysenteric serum in large doses, but few others were able to substantiate this. Dr. Penington felt that vaccine treatment had a definite place, and he employed vaccine of any pathogenic organism found. Bargen claimed to cure over 80% of his patients by the administration of a vaccine and specific antiserum from his diplococcus. The other method of treatment used was local applications to the bowel. The volume of literature and diversity of drugs used spoke volumes for their uncertain action. Dr. Penington concluded by saying that each case had to be investigated thoroughly in order to determine the ætiology as far as possible.

DR. F. BLOIS LAWTON (Melbourne), in opening the discussion on chronic ulcerative colitis, said that he would refer particularly to ætiology and treatment, for until the ætiology was defined, little progress would be made with treatment. There had been an increase in the incidence of the condition and possibly changes in habits, particularly in regard to diet, might have some influence. A wave of enthusiasm for the *Entamœba histolytica* as the cause of the condition seemed to be spreading round the world. Dr. Lawton thought that the entamœba was not the cause, and he said that even when amœbæ were found it was probable that other forms of infection were present as well. It had been stated that emetine should be given in every case of chronic ulcerative colitis. Dr. Lawton thought that this was bad advice, and that emetine should not be given unless there was evidence of an amœbic infection. If the protagonists of the *Entamœba histolytica* were correct, it might be that an amœbic infection damaged the tissues and prepared them for a pyogenic infection. It was generally considered that chronic ulcerative colitis was an infective condition, and it was probable that it was a blood-borne infection. If this were so, the possibility of focal infection had to be considered and where it was found appropriate treatment had to be instituted. The most likely cause seemed to be a streptococcus. Bargen had made out a good case for his diplococcus, but his views had not been generally accepted. Dr. Lawton had tried to isolate Bargen's organism. In a few cases an organism resembling Bargen's diplococcus in most respects, but not in all, had been isolated. Dr. Lucy Bryce thought that this organism was probably not specific. Dr. Lawton thought that a streptococcus was the common infecting agent, but that other organisms might cause the disease and that there might be a metabolic factor facilitating the entry of the organism.

In discussing treatment, Dr. Lawton said that treatment was very unsatisfactory. He tabulated the results obtained by Hardy and Bulmer, of Birmingham, and said that the results of antidysenteric serum and surgical treatment appeared to be slightly better than those obtained with expectant treatment. In addition to general measures, such as rest, warmth, free fluids, good nourishment and the treatment of focal infection, Dr. Lawton had been using the treatment advocated by Tidy. This consisted in giving starch and opium enemata, followed, when improvement occurred, by saline lavage and later by medicated enemata. This had been the most satisfactory general routine treatment that he had used. He had tried ionization without any effect. Massive doses of antidysenteric serum had not proved satisfactory in his hands. He had used vaccines with success on two occasions.

DR. KONRAD HILLER (Melbourne) said that most cases of chronic ulcerative colitis were due to some unknown cause. He had never been satisfied that a focal infection was in any way responsible. There were two things of which he might speak from personal experience. One was the value of X ray examination. A man had had ulcerative colitis following on amœbic dysentery acquired in Peru. He had been examined by X rays over and over again. As the result of a barium enema was unsatisfactory, he was given a barium meal. It was observed during the meal that there was a sudden complete evacuation of the large bowel resembling a normal evacuation, except that it was uncontrolled. This patient had suffered from a lack of control amounting almost to incontinence. He improved on belladonna and had now full control.

Dr. Hiller agreed that a sigmoidoscopic examination was absolutely necessary. Cases of malignant disease were still frequently missed and treated as ulcerative colitis.

As regards treatment, he thought that diet was important, as it was necessary that the patient should be well fed. Local treatment was always of value, especially when "Albargin" was used.

His own feeling with regard to serum treatment was that in patients who had had bowel irrigations as well as serum treatment all the improvement could be attributed to the irrigations. Serum treatment might possibly act like any other foreign protein by increasing the patient's resistance. As regards pathogen-selective cultures, when a pure growth of streptococci was obtained, this treatment had given very satisfactory results. It must always be remembered that this was a chronic condition and that it was difficult to be sure that a patient had improved under treatment and would not relapse. As regards surgical treatment, in no case had he seen an improvement that could not have been obtained by other means, except in one case in which there was a stricture of the splenic flexure, which was successfully treated surgically.

DR. D. G. CROLL (Brisbane) congratulated Dr. Penington and Dr. Lawton on a useful and comprehensive review of this disease. This was particularly useful at the present time, when repatriation hospitals were faced with the problem of pensions for men who had ulcerative colitis following on amœbic dysentery contracted during the war. In regard to the term "chronic ulcerative colitis", he would like to say that there was no such term in the register of causes of death. Hurst and Lockhart Mummery were careful to avoid using this term. That there was some harm in its use was demonstrated in the case of a repatriation patient applying for a pension for chronic ulcerative colitis. The pension was refused on the ground that the man's war history did not show acute ulcerative colitis. It did, however, show bacillary dysentery. He thought the Congress should consider the desirability of using this title.

PROFESSOR CARMALT JONES (Dunedin) referred to a type of case in which there was no association with war infection. Many New Zealand troops had served in areas of infection and he had seen a number of cases following war infection. But the type of case of which he spoke showed extraordinary chronicity, terminating in an acute and fatal illness. One case was that of a missionary treated in Dunedin Hospital. He did not know whether this patient had acquired amœbic dysentery in the tropics. His symptoms had been apparent for only one month. He died in a few weeks from the onset of symptoms. The colon showed lesions throughout and the condition was apparently a very chronic one. The other case was that of a woman with symptoms of recent onset, including blood in the stools and some tenesmus. This patient died shortly after admission to hospital. The colon was found to be completely riddled with lesions from end to end. These were apparently hopeless cases from the point of view both of the physician and the surgeon. As regards surgical treatment, he could recall one case, that of a woman who had excessive bleeding and who recovered after ileo-colostomy. This was the only case in which he had seen any benefit from surgical treatment. He wished to stress the extraordinary latency in the case of a chronic and advanced condition without any symptoms at all. He asked for suggestions for treatment of these cases. In regard to expectant treatment, he thought that bowel irrigation should be continued as long as possible, and that tannic acid was the best solution to use for this purpose. Under this treatment a moderate number of patients rubbed along fairly well for a time. The use of calcium lactate was invaluable and he thought that patients benefited from the use of calcium lactate and fresh fruit.

DR. A. R. SOUTHWOOD (Adelaide) said that, like Dr. Croll, he was surprised at the title of the paper, not from any quarrel with the terminology, but because this condition was not of common occurrence at the Adelaide

Hospital. The few cases of chronic ulcerative colitis that he had seen appeared to be the late aftermath of cases of amœbic and bacillary dysentery. He pointed out that in infants, when blood was present in the stool, a dysenteric infection was usually the cause of the trouble. He referred to a boy of seven years who had bronchopneumonia followed by troublesome diarrhœa. It transpired that he had been subject to mild attacks of diarrhœa since babyhood, for which he had had no treatment. There were blood and mucus in the stools. On examination no pathogenic organism was found, and no amœbæ. The child's serum agglutinated Flexner's organism to a titre of 1 in 200. He wondered whether this child's condition could be the forerunner of severe ulcerative colitis in later life, and if so, what treatment could prevent such a development. He wondered whether stock vaccine would be of any use and asked for suggestions for treatment.

DR. S. O. COWEN (Melbourne) referred to vaccine treatment in cases in which it appeared that Bargen's diplococcus had been found, as five of the patients investigated by Dr. Lucy Bryce and mentioned by Dr. Lawton had been under his care. Dr. Bryce was not quite satisfied that she had isolated the causal organism. In two of these five cases there was no definite benefit. In the fifth case Dr. Lucy Bryce said that if a causal organism existed, she thought she had isolated it. The patient in this instance was a young man who had had chronic ulcerative colitis for eleven years (this case justified the use of this term). He was an ambulatory patient, as he refused to give up his work during the treatment, and after five weeks of vaccine treatment his diarrhœa ceased. Unfortunately at this stage he developed acute appendicitis. After recovery he was free from diarrhœa for eight months, when he relapsed. He was benefited by a further course of vaccine treatment. Since then he had been well except for a slight relapse six weeks ago. Dr. Cowen thought that the result of vaccine treatment in this case resembled a specific reaction to specific infection.

Dr. Cowen said that he saw a fair number of cases of ulcerative colitis in Melbourne.

DR. S. V. SEWELL (Melbourne) referred to three patients who had had surgical treatment. One was a patient whom he had had in his care for several years. Sigmoidoscopic examination always showed a lesion low down. This patient had had expectant treatment and had always improved somewhat. Finally, ileostomy was performed and the opening was kept patent for over a year. During this time the patient had lavage of the large bowel as well. He became and remained well, and at the present time sigmoidoscopic examination revealed scars and no lesions, and function was normal. Dr. Sewell had had two other cases; one of these was a failure and the patient died two months after operation. In the other patient the condition had been present for six years and the patient had had expectant treatment. Ileostomy was performed ten months ago. The opening was still patent and the visible ulcers had all healed.

DR. C. B. BLACKBURN said he was to a certain extent responsible for the term "chronic ulcerative colitis". It was a short term which would convey to members of the section what was being discussed. The condition was described in all standard text books on medicine. He thought that the value of the discussion was shown by the fact that all the speakers admitted that they knew very little about the treatment of the condition. He happened to be interested in repatriation cases and regretted that the department in Brisbane had adopted any general rule for the award of pensions. His experience was that a general rule was impossible and that each case should be judged on its merits.

He was glad that the importance of sigmoidoscopy had been referred to and he wished to point out that malignant disease might simulate chronic ulcerative colitis, and also that chronic ulcerative colitis often ended in malignant disease. He could recall three cases of malignant disease following the presence of polypi originating in chronic ulcerative colitis. As regards its origin, his war experience satisfied him that many people who did have bacillary dysentery ended up with chronic ulcerative colitis. Bacilli had been isolated from lesions after death in cases in which they had not been isolated during life. This occurred in a group of Turkish prisoners suffering from pellagra and chronic ulcerative colitis who were under the care of Dr. Manson Barr.

The failure to cure this disease with antidysenteric serum had no bearing on the facts of causation, because it had been shown that the serum was ineffectual unless given very early in the disease. He was not so pessimistic about treatment as some of the speakers, but the physician had to make up his mind that treatment was a matter of months. The most important thing was to feed these patients well. He encouraged his patients to eat all that they would eat, especially of foods with a high vitamin content. He would not advise a sloppy diet. He kept the patient at rest in bed for some time, did not use irrigations much, and then preferred saline to any other solution. He used starch and opium enemata, and was also in the habit of using bismuth carbonate in the following way: half an ounce of bismuth carbonate in four ounces of saline solution run in with a funnel in such a way that all the bismuth was left in the bowel after the solution had drained away. He found this extremely useful; after it the patient would often go from six to eight hours without a motion. In addition, he advised giving bismuth subnitrate in large doses (180 grains) every four hours. He also gave calcium lactate at times, but preferred to give his patients such a diet that additional calcium was unnecessary. These patients needed calcium largely because they had been starved. Another form of treatment was to give the patient hot fomentations to the abdomen every two hours in the day time and every four hours at night. Surgical treatment should be reserved for those cases in which all other forms of treatment had failed. One or two cases had given very good results. One of these was that of a little girl with an appendicostomy who was quite well two years after operation.

In reply, Dr. Penington referred to the case mentioned by Dr. Southwood. It was doubtful whether such a patient would develop chronic ulcerative colitis. He agreed that a stock vaccine might help. A little hydrochloric acid might make some difference. Hurst had found achlorhydria in 25% of cases. As regards diet, it was his experience that the ulcerative colitis patient could stand anything but milk and cellulose. As these patients improved, he added milk in small amounts to the diet.

In reply to Dr. Cowen, Dr. Penington said that he had had one case, that of a woman from New Guinea, from whose fæces a streptococcus was isolated; the patient had improved after treatment with an autogenous vaccine. She had been well for the past two and a half years. He had had one other case in which a hæmolytic streptococcus was isolated by pathogen-selective culture. In such a case a vaccine was well worth a trial. He thought that every case should be fully investigated both for bacillary and amœbic organisms.

(*To be continued.*)

British Medical Association News.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

Harding, Warren G., L.R.C.P., L.R.C.S. (Edinburgh), L.R.F.P.S. (Glasgow), 1930, F.R.C.S. (Edinburgh), 1933, c.o. Sydney Sanitarium and Hospital, Wahroonga.

Harding, Frances Keller, L.R.C.S., L.R.C.P. (Edinburgh), L.R.F.P.S. (Glasgow), 1930, c.o. Sydney Sanitarium and Hospital, Wahroonga.

Obituary.

JOHN BOX.

We regret to announce the death of Dr. John Box, which occurred on February 3, 1934, at Surrey Hills, Victoria.

Books Received.

HISTOLOGY, by S. Ramón-Cajal, M.D., F.R.S., LL.D., revised by J. F. Tello-Muñoz, M.D., authorized translation from the tenth Spanish edition by M. Fernán-Núñez, M.D.; 1933. London: Baillière, Tindall and Cox. Royal 8vo., pp. 752, with 535 illustrations. Price: 40s. net.

THE 1933 YEAR BOOK OF THE EYE, EAR, NOSE AND THROAT; 1933. Chicago: The Year Book Publishers. Crown 8vo., pp. 632, with illustrations.

THE 1933 YEAR BOOK OF GENERAL SURGERY; 1933. Chicago: The Year Book Publishers. Crown 8vo., pp. 826, with illustrations.

A SHORT HISTORY OF PHYSIOLOGY, by K. J. Franklin; 1933. London: John Bale, Sons and Danielsson, Limited. Crown 8vo., pp. 122. Price: 3s. 6d. net.

MODERN INHALATION THERAPY FOR THE GENERAL PRACTITIONER, by C. H. Auty, M.R.C.S., L.R.C.P.; 1933. London: William Heinemann (Medical Books Limited). Crown 8vo., pp. 73, with illustrations. Price: 3s. 6d. net.

FUNDAMENTALS OF BIOCHEMISTRY IN RELATION TO HUMAN PHYSIOLOGY, by T. R. Parsons, B.Sc., M.A.; Fourth Edition; 1933. Cambridge: W. Heffer and Sons, Limited. Crown 8vo., pp. 447. Price: 10s. 6d. net.

Diary for the Month.

FEB. 20.—New South Wales Branch, B.M.A.: Ethics Committee.
FEB. 22.—South Australian Branch, B.M.A.: Branch.
FEB. 23.—Queensland Branch, B.M.A.: Council.
FEB. 27.—New South Wales Branch, B.M.A.: Medical Politics Committee.
FEB. 28.—Victorian Branch, B.M.A.: Council.
MAR. 1.—South Australian Branch, B.M.A.: Council.
MAR. 2.—Queensland Branch, B.M.A.: Branch.
MAR. 5.—New South Wales Branch, B.M.A.: Organization and Science Committee.
MAR. 5.—Tasmanian Branch, B.M.A.: Council.
MAR. 6.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
MAR. 6.—New South Wales Branch, B.M.A.: Ethics Committee.
MAR. 7.—Victorian Branch, B.M.A.: Branch.
MAR. 7.—Western Australian Branch, B.M.A.: Council.
MAR. 9.—Queensland Branch, B.M.A.: Council.
MAR. 13.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MAR. 19.—Tasmanian Branch, B.M.A.: Council.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," pages xviii, xix and xx.

COMMONWEALTH DEPARTMENT OF HEALTH: Medical Officer.
LAUNCESTON PUBLIC HOSPITAL, LAUNCESTON, TASMANIA: Resident Medical Officers.
MOTHERS' AND BABIES' HEALTH ASSOCIATION, ADELAIDE, SOUTH AUSTRALIA: Honorary Officer.
ROYAL NORTH SHORE HOSPITAL OF SYDNEY, NEW SOUTH WALES: Honorary Officers.
ST. GEORGE DISTRICT HOSPITAL, KOGARAH, NEW SOUTH WALES: Senior Resident Medical Officer.
TAMWORTH DISTRICT HOSPITAL, TAMWORTH, NEW SOUTH WALES: Pathologist.
THE RYDE DISTRICT SOLDIERS' MEMORIAL HOSPITAL, RYDE, NEW SOUTH WALES: Resident Medical Officer; Pathologist.
VICTORIAN EYE AND EAR HOSPITAL, MELBOURNE, VICTORIA: Resident Surgeons.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing. Lower Burdekin District Hospital, Ayr.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	Combined Friendly Societies, Clarendon and Kangarilla districts. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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